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ORIGINAL ARTICLES.

LAPAROTOMY IN THE TREATMENT OF PENETRATING WOUNDS AND VISCERAL INJURIES OF THE ABDOMEN.[1]

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WE have met this evening to discuss a most important surgical operation. It is an operation which, limited to penetrating wounds of the abdomen, no surgeon had ever performed until within a few months, and it is an operation in which surgeons of every part of the world feel a common interest. Laparotomy for penetrating wounds and visceral injuries of the abdomen is a surgical procedure about which great diversity of opinion exists. It is now a fitting time to discuss the important question of the propriety of this operation; and although the number of cases in which this heroic method of treatment has been adopted is very limited, nevertheless, the great principles upon which the operation is based are sufficiently established to enable us to discuss the subject in an enlightened and intelligent manner.

I shall, after much deliberate thought and study, array myself upon a side in opposition to the teachings of my honored friend and preceptor, the late Dr. James R. Wood. His memory is revered by all connected with this venerable hospital, and his masterly teaching has left its forcible impress upon every department of surgery. He advocated a plan of treatment in abdominal surgery which I feel bound, in the light of antiseptic surgery of the present time, to modify. It was not a characteristic of Dr. Wood to be behind his age in his work or in his teachings. He was not only abreast, but many years in advance of his times. Since his death the science of surgery has received an impulse advancing to a point from which, upon looking back, one can observe the great revolution which has taken place. One can perceive at a glance that this great reform is due to the development of a system of surgery which was inadequately understood a few years since, but which now has the almost undivided support of an entire profession.

The operation of abdominal section has only been rendered possible within the past few months in a class of injuries which before the introduction of antiseptics were mortal wounds. Experimental work upon the lower animals in laboratories, and the cultivation of bacteria in these institutions, have opened to us new fields of inquiry and of research, and by this knowledge we are enabled to save human lives where before they were lost. Experimental work which has been carried on within the last few months in other laboratories as well as in the Carnegie Laboratory, and also the researches into the life history of microörganisms, together with a study of the value and safety of the different germicides, have rendered it possible for us to perform operations which hitherto were considered impossible and without the pale of legitimate surgery.

In the memorable debate which was held in the New York Academy of Medicine, between the late Dr. J. Marion Sims and Dr. James R. Wood, the former advocated the opening of the peritoneal cavity in penetrating wounds. *Apropos* of the Garfield case, the latter surgeon offered some very cogent arguments against this procedure, and laid great stress upon the fact that opening the peritoneal cavity in a case of ovariotomy in a patient prepared for the operation was altogether a different procedure from opening the peritoneal cavity in a case of gunshot or penetrating stab wound of the abdomen, with the accompanying shock. In ovariotomy the shock comes after the operation; in gunshot or stab wound of the abdomen the shock is present before, as well as after, the operation. Antiseptic surgery has demonstrated, within a short time, the safety of opening the peritoneal cavity, and this fact alone has changed the views of surgeons upon the question of the propriety of abdominal section in penetrating wounds. It has been clearly proved over and over again by the crucial test of clinical experience that laparotomy is not attended with any additional risk, as was formerly supposed. The peritoneal cavity is invaded daily by surgeons, and no harm follows this procedure in ovariotomy. If this is true in a certain class of surgical diseases, it should also hold good, with certain limitations, in surgical injuries. I shall endeavor to prove, by referring to a number of cases in my hospital practice, that laparotomy, in penetrating wounds of the abdomen, is not attended with any great dangers under proper conditions, and that the presence of shock should never deter a surgeon from boldly opening the peritoneal cavity in a penetrating wound.

In the paper this evening I shall consider the subject of laparotomy in

I. Penetrating stab wounds;

II. Penetrating gunshot wounds;

III. Rupture of the intestine;

and at some future time I shall take up the remaining indications for abdominal section as they present themselves to the general surgeon. And now, these two patients, who are present this evening, have both received during this winter penetrating stab wounds of the abdomen. They have both recovered and they will now be discharged, cured, from St. Vincent's Hospital. I shall avail myself of these cases to venture some remarks upon the treatment

[1] Read before the New York County Medical Association, February 15, 1886.

of penetrating abdominal wounds, and shall also discuss the treatment which was adopted in many other penetrating abdominal wounds which have occurred in my hospital services during the present winter. I shall also take the liberty of referring to some cases of this character which have occurred to me during the past few years, together with some cases reported by other surgeons.

CASE I.—T. H., æt. twenty-two, was admitted into St. Vincent's Hospital, November 29, 1885. Patient was stabbed with a knife in the abdomen. A large fold of intestine protruded through the wound. The fold was circular in outline and measured about twelve inches in length. The intestine was slightly caught, constricted, and deeply congested. Upon the surface of the gut there were two wounds, one of which was longitudinal and about two inches in length, and opened into the lumen of the intestine, through which fecal extravasation had taken place. The other wound involved the peritoneal and muscular coats. I introduced into the first wound, with the assistance of Prof. Bryant, a Czerny-Lembert suture of catgut. The suture passed through the peritoneal coat on one lip of the wound, and was then brought out at a point opposite, and then the peritoneal coat was involuted so as to bring these surfaces in contact, and this continuous suture closed the opening into the intestine. The second wound was then sutured. Several inches of intestine were drawn out, after enlarging the abdominal wound, in addition to the part which had already protruded, in order to ascertain if any other injury existed. As no other damage to the gut was detected, the intestine was carefully and finally irrigated with a warm solution of bichloride of mercury, and the cavity was sponged.

The remarks that I would venture to offer in regard to this case are: First. That the operation of an exploratory laparotomy was not called for in this penetrating abdominal wound, because the intestine already protruded; that the wounds in the gut were found extraperitoneal, and hence no extravasation of contents into the cavity took place; that enough of the canal could be withdrawn, by slightly enlarging the original wound, to render the diagnosis certain that no other wounds existed. Second. In my experience, those cases of stab wounds of the abdomen are more favorable in which a considerable quantity of the gut immediately protrudes from the peritoneal cavity. In these cases the diagnosis is rendered certain, the extravasation is outside of the abdomen, and the line of the treatment is clear. Third. That the concealed wound is fraught with the greatest danger to the patient and with the greatest anxiety to the surgeon.

Exploratory laparotomy, where the gut does not protrude, removes the danger to the patient and the anxieties of the surgeon. The exploratory laparotomy may either be in the median line or at the place where the wound existed. I prefer the median incision; but, in cases of doubt as to visceral injury, some surgeons recommend the enlargement of the original wound (which operation has been termed débridement), and the inspection of the cavity through this opening. If evidences of visceral injury are present, a regular laparotomy can then be performed in the median line.

I will now introduce the next patient, who also received a penetrating stab wound of the abdomen at the time of the convalescence of the first patient.

CASE II.—J. J., æt. fifty-seven, admitted to St. Vincent's Hospital Dec. 20, 1885. Patient was stabbed in the abdomen. Upon admission, was in moderate shock. A stab wound was present in the umbilical region four inches above and three inches to the left of the umbilicus. A finger-shaped piece of omentum protruded through this opening. Patient complained of being very cold, and suffered pain over seat of wound. No vomiting; pulse feeble and rapid. Three hours after wound was received, patient was transferred to operating-room, and every preparation was made for laparotomy, in accordance with the description, to be given later, of the technique of the operation. The median incision was made. The peritoneum was divided between my index and middle fingers, which were used as guides, and a probe-pointed bistoury was employed in the cavity. The incision was extensive, and through this wound the contents of the abdominal cavity were examined. Hot flat antiseptic sponges, saturated in a mild bichloride solution, were used to protect the intestine during the examination. The coil of small intestine rolled entirely out of the cavity upon both sides of the wound, and the colon and stomach were turned upward and examined upon their anterior and posterior surfaces. During the exposure of the viscera they were constantly irrigated with a warm and weak solution of bichloride of mercury. The alimentary canal, beginning above at the stomach and ending below at the sigmoid flexure of the colon, was thus carefully examined, together with the mesentery and omentum. The examination occupied about half an hour, and was thorough and complete. No wound of any viscus was found, and the contents of the abdominal cavity were replaced and the peritoneum, linea alba, and the skin were separately sutured. Toward the close of the examination of the contents of the peritoneal cavity, it became necessary to stop the administration of the ether and to use hypodermics, to which the patient quickly responded. In six hours after the operation he had reacted nicely, and his condition at the close of the day was in every way satisfactory.

This patient's temperature never was higher than 99½° F. at any time following the day after the operation, and he made a most satisfactory and complete recovery. To both Dr. Kelly, the House Surgeon, and to Dr. Davin, the Senior Assistant, I feel especially indebted for the indefatigable care, good judgment, and untiring attention which they displayed, not only in the careful preparations which they made for these operations, but also for the professional watching which they gave these two remarkable patients. Every hospital surgeon realizes, sooner or later, to what extent he is indebted to his house staff for the uninterrupted success which attends his major operations.

I am aware that this procedure will expose me to criticism as regards the line of treatment pursued. It will be urged by those who oppose laparotomy in penetrating wounds of the abdomen, that this case would have recovered without the great risks involved in this operation, and hence that laparotomy was unnecessary. That the patient would have recovered without any surgical interference is undoubtedly true, judging now from the knowledge obtained by the exploration of the peritoneal cavity. It must be remembered, however, that this knowledge was not possessed before the operation. But if, on the other hand, a wound of the intestine existed, and "the let alone, do nothing, give opium practice"

had been resorted to, the patient would have died. We must judge such a case as this by the symptoms present at the time the patient is injured, and not from an opinion formed after the exploration has been made or an autopsy has been performed. There seems to be a tendency among medical men to judge a case in the light of the knowledge bestowed by a post-mortem examination. It is very easy for any surgeon to be wise after an autopsy; but we must judge a case upon the symptoms present at the time of the injury, which is the time for the surgeon to act in order to save human life.

The laparotomy in this case showed that the intestine was not wounded, and this knowledge was requisite in order to treat the patient upon accurate and scientific principles. The laparotomy here did not add an additional risk not common to all great operations, and it demonstrated that the operation can be performed in a thorough way without any more danger than attends every surgical operation of any magnitude. The laparotomy in this case illustrates, also, that even though the stab wound which calls for the operation is not a mortal one, that the operation can be done with impunity in such wounds.

The abdominal section in this case is the first exploratory laparotomy that I can find in surgery where the operation has been performed in stab wound of the abdomen without the previous knowledge of any wound within the peritoneal cavity and without the protrusion of the gut. It is, in other words, the application of the same principle to stab wounds upon which laparotomy in gunshot wounds of the abdominal cavity is performed. It is, however, the application of a principle to a class of wounds which are not as fatal as gunshot wounds. The future practice of surgery only will decide to what extent the profession will indorse the adoption of this principle in the treatment of the less fatal class of wounds, while the laparotomy, which is a common factor in both varieties of wounds, is the same in one case as in the other.

The complete recovery of this patient after the exploratory laparotomy in a penetrating stab wound of the abdomen, places upon record the fact that the operation can be, and has been, done with safety, and that, too, when the contents of the peritoneal cavity are temporarily removed.

I am not prepared to say that I should not recommend, in another case of this kind, that the original stab wound be enlarged so as to allow the surgeon to inspect the intestine and thus see if there are any evidences of perforation or injury to the viscera. If there are any evidences of visceral lesion, a laparotomy can be performed in the median line. This plan would be a little more conservative than the adoption of the one which I have already reported.

The resolution to perform an exploratory laparotomy in stab wounds as a means of diagnosis, was not made suddenly, but was the result of much study and reflection after an extended experience in the treatment of a large number of penetrating wounds.

The study of the following selected cases which occurred in my hospital experience, and which terminated fatally after the older methods of treatment had been adopted, led me to believe that there was still much to be learned in the management of these cases, and from the experience thus gained I was led to perform laparotomy in the case mentioned.

CASE III.—P. B., an Italian, æt. twenty-three, admitted to St. Vincent's Hospital, February, 1883. Patient was stabbed by a stiletto in the abdomen. The wound was situated three and a half inches from the median line and five and a half inches from the umbilicus. The wound was two and a half inches in length. Through the wound a small mass of omentum protruded. The omentum was lacerated and was bleeding. In a radius of five inches from the centre of the wound there was well-marked emphysema. The patient was not profoundly in shock. The protruded omentum was ligated, the distal portion removed, and the base attached to the wound. Peritonitis quickly supervened, and death occurred in a few days from acute peritonitis due to a perforation of the gut. No laparotomy was performed; but the emphysema made the diagnosis positive of perforation of gut.

CASE IV.—W. R., æt. twenty-nine, September, 1885, St. Vincent's Hospital. Patient was stabbed in abdomen. There were two wounds, one penetrating the abdomen and situated three inches to left of umbilicus and upon a level with it. A portion of omentum protruded which was about two inches square. Patient was in a condition of moderate shock. The omentum was ligated close to the skin, and after tying a small vessel and arresting all the hemorrhage, the stump was dropped into the peritoneal cavity. A single suture was all that was necessary to close abdominal wound. Patient had violent fixed pain in abdomen, and symptoms of peritonitis, sank slowly, and in forty-eight hours was dead.

Autopsy. A large quantity of yellowish fluid was found in the peritoneal cavity. Intestine glazed over with inflammatory exudation. A portion of the omentum was found between the layers of muscles. The jejunum was perforated in two places; the two openings were separated by a narrow bridge of intestine. The appearance of the wound indicated that the knife had passed through the intestine while the surfaces were in contact. Laparotomy was the only resource which could have saved the patient's life.

CASE V.—L. D., Italian, admitted to Ninety-ninth St. Hospital on February 22, 1882, suffering from a stab wound of the back and front of the abdomen, both of which penetrated the abdominal cavity. The patient died without a laparotomy. The intestine was wounded, and had an abdominal section been performed at once I feel sure that a chance of recovery would have been afforded to the patient, while in the absence of the operation the wound was necessarily mortal.

CASE VI.—J. McG., æt. twenty-one, admitted to St. Vincent's February, 1885. Patient was stabbed in right groin just above inguinal canal, and about two inches from symphysis pubis. Wound small and was closed, and patient walked home, refusing to remain. Next day the ambulance was summoned, and patient was readmitted. The original wound had reopened, and there was a well-defined swelling above the wound. Peritonitis developed, and patient was treated by the old method. In twenty-four hours patient died.

Autopsy. There was an internal strangulation eight inches above ileocæcal valve. Three inches of strangulated gut were gangrenous. The volvulus was produced by the sudden stab wound. Though the intestine was not injured, a laparotomy would have probably saved the life.

In connection with this interesting case, a most important question is suggested. Is a surgeon justified in performing laparotomy, as in one of my

cases already mentioned, and examining the intestines, in a case where there is no evidence of visceral injury? This case certainly is pertinent, and demonstrates that volvulus can be produced by a stab wound, the infliction of which causes sudden peristaltic action of the gut and develops a twist in the long axis of the small intestine. A laparotomy in this case would in all probability have saved the patient's life, and yet no visceral injury in the way of a perforation existed.

This case illustrates the fact that, besides actual wound of the gut, there is another condition which is just as fatal to the patient, though no wound of the gut is present. Nothnagel's elaborate experiments upon animals, a most interesting account of which may be found in the *Beiträge zur Physiologie und Pathologie des Darmes*, Berlin, 1884, illustrate the manner in which strangulation of the bowel may occur as a result of stimulation of the intestine by the faradic current through electrodes so applied as to produce contraction of the circular muscular fibres of the gut. There is no doubt that the stimulation produced by a stab wound may also cause irregular and sudden peristalsis, which may result in a twisting of the gut upon its own axis or upon the mesenterical axis. Internal strangulations, in the form of invaginations or intussusception or volvulus, are often associated with irregular and spasmodic action of the intestine. In almost every variety of internal strangulation, or intestinal obstruction, colic, characterized by irregular spasmodic peristalsis, is a prominent symptom.

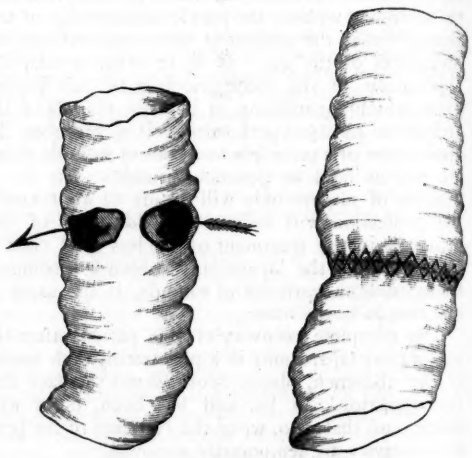
The case already mentioned clearly demonstrates that the condition of volvulus may result from a penetrating stab wound, and this condition is a most serious one, leading, sooner or later, to a fatal termination. Laparotomy will rescue a patient exposed to the dangers of internal strangulation in any of its various forms; and laparotomy for the relief of this condition in penetrating wounds is an operation which has never been suggested until the appearance of the case which I have just mentioned. I believe that this condition has caused many deaths, and that the attention of the profession should be directed to this condition, offering, as it does, a new indication for the performance of laparotomy. I can recall many other cases in my own experience which forcibly illustrate the fact that laparotomy might have saved life, and the failure to perform it in each case removed the only chance of recovery which was possible. Ten specimens, taken from the patients to whom reference has already been made, afford us a rich field for study, observation, and reflection.

CASE VII.—P. B., æt. twenty-five, admitted to St. Vincent's Hospital, Oct. 1885. Patient was stabbed in the scrotum with a penknife. The knife entered the scrotum, in which there was an unreduced hernia. The incision was about an inch and a half in length. No hemorrhage from the wound. The finger was introduced into the scrotum and no intestine was felt. The subsequent history of the patient proved that the hernia had become reduced at once after the receipt of the wound. In all probability a spasmodic contraction of the intestine occurred when the gut was pierced by the knife, and this fact further illustrates the principle involved in the production of volvulus in these cases of penetrating abdominal wound. This is another case corroborative of the statement that I have made, that volvulus can be produced by this spasmodic action of the intestine as the result of stab wound.

The patient upon admission was in good condition, but the next day grew rapidly worse and soon was in collapse. An examination of the wound showed the presence of matter identical with the material which was vomited. Patient was placed under the influence of an anæsthetic by Dr. Totman, of Syracuse, and the scrotal wound enlarged and hernial sac opened. It was now evident that fecal extravasation had occurred within the abdomen, and that it had gravitated downward into the hernial sac from the pelvis. The wound was enlarged so as to explore the entire peritoneal cavity. Two large wounds of the intestine were found, and it became necessary to resect this portion in order to close the opening. The divided ends were sutured. The peritoneal cavity was cleansed with a solution of bichloride of mercury, a great amount of fecal extravasation was removed. The wound was treated as in the other cases already mentioned. The patient reacted from the operation and was in better condition after the operation than just before the laparotomy. He finally sank rapidly and died the same evening.

Examination, post-mortem, of the resected intestine showed that the wound was large and upon both sides of the gut. No leakage occurred in the line of suture when water was forced through the canal.

FIG. 1. FIG. 2.



Portion resected. Intestine sutured.

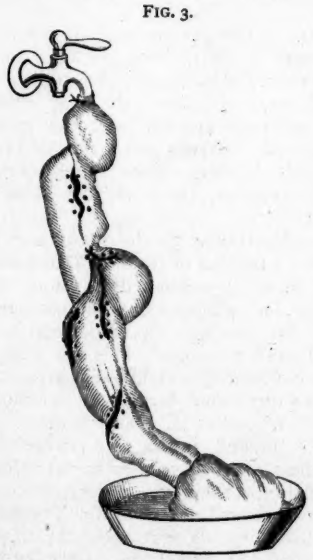
The remarks that I would offer upon this case are these: First. While the patient died some hours after the operation, in which a complete resection of a portion of irreparably damaged intestine was made, the patient survived the laparotomy, and his condition of shock was better after the resection of the intestine than previous to the operation. Second. The patient died on account of fecal extravasation into the cavity of the abdomen, and not from the direct effects of the operation itself. Third. The sutures closed completely the divided and afterward united ends of the gut, and not a drop of water leaked through the sutured portion, though the faucet was turned with full force from the Croton aqueduct.

The next specimen is from a case of penetrating stab wound of the abdomen, in which I performed laparotomy.

CASE VIII.—T. C., æt. twenty-two, admitted to Bellevue Hospital January 1, 1886. Patient was suffering from a stab wound in the left side just above the centre of the crest of the ilium. Upon admission patient had a fair pulse. The wound was half an inch long, and from it there had been considerable hemorrhage. The wound was dressed aseptically by Dr. Jarvis. When I saw the patient that morning, I could find no signs or symptoms which made it evident that the intestine was perforated. The temperature was 102° F., and no shock; the pulse was 104 and of fair volume; the urine was clear; no pain except upon pressure. I passed my finger, which was thoroughly disinfected, into a large wound, which readily admitted it, obliquely forward and upward for two inches. Upon meeting with slight resistance, I withdrew the finger and gas bubbled out from the deeper parts of the wound. I thought this was evidence that the gut was perforated, and proceeded at once, with every possible preparation, to open the peritoneal cavity. The median incision was made. Upon opening the peritoneal cavity two incised and three lacerated wounds of the intestine were found. They were situated in the jejunum and ileum, and the lacerated wounds were separated by a bridge of mucous membrane. These wounds were all carefully stitched by a Czerny-Lembert suture, and the abdominal cavity was sponged out after the fecal extravasation was removed. The wound in the abdominal parietes was then closed in the manner already described. Patient rallied from the operation, and lived about forty hours, when he sank rapidly and died.

The autopsy revealed the presence of considerable quantity of bloody serous fluid in the peritoneal cavity; but no perforations had been overlooked. The wounds in the intestines were all sutured, and none of the stitches had given way in any of the wounds.

FIG. 3.



Showing gut after perforations were closed.

The remarks that I would offer in reference to this case are these: First. That laparotomy was the surgeon's only resource to save the life of the patient. Second. Notwithstanding the fact that there were five perforations, three of which were badly lacerated wounds, the sutures all held firmly, and that when the Croton water was turned on with full force not a single drop leaked through any of these various and numerous perforations. This experiment was conducted with the assistance of Dr. Jarvis, the House Surgeon, to whom I feel greatly indebted for his kind attention and skilful care of this case. Third. No perforations were overlooked in this or the following cases.

CASE IX.—T. B., æt. twenty-eight, admitted to Bellevue Hospital in October, 1875. Patient was stabbed in the abdomen. The wound was situated two inches above and one inch to the right, and parallel with the linea alba. Through this opening about five feet of intestine protruded. I was unable to find any wound of the gut, and the viscera, after having been washed, were then reduced into the peritoneal cavity. The wound was sutured and the patient placed under the influence of opium. A slight amount of peritonitis developed, but the patient made a most satisfactory recovery.

CASE X.—T. T., æt. fifty, admitted to Bellevue Hospital, November, 1875. Patient was stabbed in the abdomen, and many feet of intestine protruded. The viscera were washed with a warm solution of carbolic acid and thoroughly examined, and no wound being found, the intestine was returned into the peritoneal cavity. Patient was placed under the influence of opium, and after a few days recovered. This case did not belong to me, but I assisted Dr. Glass, who was then House Surgeon, to reduce the viscera. I am unable to state who was the attending surgeon at the time. This case is not included in my list.

Remarks.—These two cases, occurring about the same time, afford examples of the statement that many feet of intestine may protrude, and if uninjured may be returned, and the patient recover.

CASE XI.—F. McB., æt. fifty, admitted to Bellevue Hospital, Oct. 1875. Patient was stabbed in the abdomen with a long butcher's knife. Upon admission patient was in profound shock and was bleeding profusely from the external wound, which was situated in the seventh intercostal space just below the nipple and was one inch in length. Physical examination of the chest showed no evidence of injury to the lung. Patient vomited ten ounces of blood and before admittance had also vomited blood. During the evening the patient several times vomited blood which had, it is believed, gastric juice mixed with it. Hot air bath, hypodermics of brandy and ergotine, rectal enemata of brandy and all other means were used to bring patient out of the profound collapse into which he had sunk. Patient was sustained by hypodermics of brandy every two hours, and also by enemata of milk and brandy for a period of twelve days, at the expiration of which time he was allowed to take liquid nourishment by the stomach.

These cases were admitted into Bellevue Hospital when I was house surgeon, and during Dr. Wood's time. This is a case of penetrating stab wound of the stomach, with recovery; the two preceding cases were penetrating wounds of the abdomen, with protrusion of many feet of the gut, but with no perforations in the intestine.

The following surgeons have published successful cases of penetrating stab wounds, where either a true laparotomy was performed or the original wound

was enlarged, the perforations sutured, and the cavity sponged:

Kwiencinski,	one case—recovery	1
Compton,	" " "	1
Stucky,	two cases—recoveries	2
Byrd,	one case—recovery	1
Tiling,	" " "	1
Reichenback,	" " "	1
Prieto,	" " "	1
Avery,	" " "	1
Devereaux and Hurd,	" " "	1
Glass,	" " "	1
Dennis,	four cases—recoveries	4
Total		15

There are, of course, other cases besides these fifteen, but these have been found in recent medical journals, except two cases of my own, which happened some time ago, and which I have never published; but do so now to illustrate from personal experience the statements which I have already made in this article. I have lost two cases of stab wound after laparotomy: in one, resection of the gut was made; and in the other, five intestinal wounds were sutured.

I have omitted in this summary those cases (III., IV., V., and VI.) which are reported for purposes of illustration, and which have no bearing upon the success of laparotomy, as they occurred prior to any discussion of this operation.

(To be concluded.)

OÖPHORECTOMY FOR THE RELIEF OF HYSTERO-EPILEPSY:

PERITONITIS WITH PERSISTENT VOMITING; CHLORAL BY ENEMA; RECOVERY.[1]

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MISS M. W. Y., of Kentucky, aged twenty-four, a well-developed, medium brunette, with the marked physiognomy of an epileptic, was admitted to my private hospital March 21, 1885. She began to menstruate at thirteen, and the function for one year and a half was normal and painless. Since that time, however, she has suffered greatly with dysmenorrhœa, and during the past two years her menses have been very irregular, six weeks sometimes intervening, while at other times only three and a half weeks elapsed between the periods. Menstrual coagula were seldom discharged, but at times the quantity of blood was somewhat excessive. She attributes the change in her menstrual phenomena to severe lifting.

On Nov. 10, 1883, she suffered an attack of fainting at the approach of menstruation and was unconscious for a short time. Similar attacks have occurred at each menstrual period since, and during the past year the attacks have recurred sometimes as often as five or six times per month. During some of these seizures, but not all, unconsciousness is complete, and she awakens from them without any knowledge of what has occurred. From members of her family, the information is obtained that tonic and clonic spasms of the muscles characterize the more marked attacks, but not the milder ones. From personal observation made by Dr. Hirons during seizures which occurred while she was in the hospital, it was noted that during the period of unconsciousness following an attack the respiration and pulse were but little changed, but the pupils were dilated and all the muscles were passive and relaxed except the orbicularis palpebrarum, which was somewhat contracted. At the time of her admission she complained of headache, more severe in the occipital region. She also suffered much pain in the lumbar and ovarian regions, especially in the vicinity of the right ovary.

A physical examination at the time of admission revealed no trouble with lungs, heart, liver, stomach, or spleen. Subsequent examination excluded the possibility of renal disease. The vagina was found to be normal, though somewhat relaxed from former examinations with speculum, which had been made in the course of local treatment administered before coming under my charge, and also to a pessary which she had worn. Her uterus was slightly above normal size, and somewhat retroverted. Its cervical canal was patulous and bathed in the discharge characteristic of uterine leucorrhœa; the uterine probe was admitted to a depth of two and a half inches. The left ovary could be detected somewhat enlarged, and slightly prolapsed; while the right ovary, not perceptibly enlarged, was excessively sensitive to pressure on conjoined manipulation. The Fallopian tubes could not be differentiated, nor could any abnormal condition of the broad ligaments be detected, except possibly a slight fulness on the right side near the uterus.

The pain in the ovarian region, noted above, I was informed by the patient, had been almost constant for a year, and was quite unbearable. Although apparently well nourished she was weak, easily fatigued, had poor appetite, and her muscles very flabby. She was nervous and somewhat hysterical.

Diagnosis.—Hystero-epilepsy, due to organic disease of the ovaries, the hysterical element being prominent.

Treatment.—Having obtained most satisfactory results in quite a number of cases, of a somewhat similar character, in which ovarian disease was unquestionably present, but epileptic symptoms not marked, from rest, milk diet, massage, etc., I decided to place the patient on such a course. This was done, and the treatment continued for eight weeks without improvement in any direction. During the treatment, as well as subsequently, after she had left the hospital, the bromides, cannabis indica, etc., were thoroughly tried, without relief of pain or any apparent control of the epileptiform seizures. The hydrate of chloral was given on several occasions for the relief of headache, and it uniformly aggravated the attack.

The patient was sent home in the latter part of May greatly discouraged. She visited my office at intervals of a few months until January 4, 1886, at which time she was readmitted to the hospital, for the purpose of having oöphorectomy performed. She had sought this operation long ago, but hoping

[1] Read before the Cincinnati Academy of Medicine, February 8, 1886.

to relieve her by measures less radical and revolutionary, I had constantly refused to perform it. Her pleadings were now irresistible, as her sufferings, both mental and physical, seemed beyond endurance. She had thoroughly informed herself not only of the possible dangers of the operation, but of its consequences upon her physical organization even in the event of a cure. Her family, as well as her family physician, joined in her request. The operation was performed January 18th, in the presence of Drs. Hirons, E. W. Mitchell, and my associate, Dr. Withrow.

An abdominal incision was made two inches in length. The ovaries, which with their tubes are here exhibited, were found to be hard and rather nodular, the left bearing a soft mass on its distal extremity, and the right had two or three small cysts on its surface. Each ovary with its tube was brought into view, the broad ligament transfixed, and the tube included in one side and the ovary in the other side of a Staffordshire knot. The ovaries and tubes were then cut away. A small tense cyst of the right broad ligament near the uterus was ruptured during the manipulation and its contents evacuated. The peritoneum was sponged carefully and the abdominal incision closed by four silver sutures.

The operation occupied about thirty minutes and the patient promptly rallied. The patient was ordered hot whiskey, but no solid food, during the first twenty-four hours. Six hours after the operation one-fifth grain of morphia was administered hypodermatically, as she complained of considerable pain. She slept during a portion of the night. During the second day the persistence of abdominal pain required repetitions of the hypodermatic injections of morphia three times. Vomiting occurred once. Temperature 100°, pulse 100. An ice-bag was ordered to the abdomen, and she was allowed some fragments of ice, as her thirst was considerable. On the morning of the third day very slight tympanites was noted. The pain in the lower portion of abdomen was increased. There was considerable retching and occasional vomiting. Temperature and pulse unchanged. On the evening of the third day tympanites was more marked. Pain was undiminished except when under morphia, and vomiting more frequent. Temperature 100.5°, pulse 110. Hot water was substituted for the ice, and seemed temporarily to allay the vomiting.

On the morning of the fourth day the retching was constant, and violent vomiting very frequent; the fluid ejected was dark green, so characteristic of peritonitis. Tympanites increased; abdominal pain severe, though morphine was increased. Pulse 110, and feeble; temperature 100.8°; patient very restless and anxious, and manifestly in a condition of peril. On the removal of dressings, the abdominal incision was found to be united by first intention, despite the vomiting; an enema of warm water and salt was given. During the outflow of the water from the bowel, considerable gas escaped, but scarcely any fecal matter, the rectum being empty. An enema containing fifty grains of chloral hydrate was now administered, following which she went to sleep in less than thirty minutes, and slept quietly for four or five hours. Her temperature had now fallen to 99.5°; the pulse remaining 110. She was then given some fluid nutriment, and again fell asleep, and spent the night in comfort; being free from pain, and not having vomited once since the administration of the chloral. The next day, the fifth after the operation, she complained of pain and some nausea, and was given forty grains of chloral by enema, and the symptoms vanished. On the sixth day she vomited once, and after a dose of chloral per rectum no more trouble occurred. The stitches were removed on the eighth day, when the wound had healed firmly throughout. On the right side of the incision, the lower stitch had produced some irritation, and a stitch-hole abscess formed. Her recovery has been uninterrupted; she sleeps perfectly, appetite good, pulse and temperature normal.

I shall say but little in the way of justification of oöphorectomy for epilepsy in such cases. The reports of Tait, Keith, Hegar, Thomas, Battey, Taber Johnson, Sutton, Goodell and others, are certainly quite encouraging. But the operation must be subjected to further trial, in properly selected cases, before its full value can be considered as defined. Neither do I propose, in this report, to discuss the general question of oöphorectomy for organic disease of the ovaries, where epilepsy is not present. It has been my good fortune to secure satisfactory results in such a large number of cases of ovarian disease, occurring in young subjects, by rest and other appropriate treatment, that I have hitherto been, and am now, quite conservative in the management of such cases, avoiding surgical interference until other methods have been thoroughly tested.

I do not believe it a trivial matter to unsex a woman. I do believe that there has been and is now, in some quarters, a tendency to an abuse of the operation of oöphorectomy. Nevertheless my own personal experience and the experience of others having larger opportunity to observe, warrant the opinion that in certain cases this operation is the only remedy which can bring relief to the sufferer. Of course, nothing can be said now as to the results of the operation in the case reported to-night; time must show whether the patient will find relief from her agonizing pain or her epilepsy.

My object in presenting this case, isolated from others, was solely for the purpose of calling your attention to the magic effect of chloral, per rectum, in arresting the vomiting and the pain. For an intelligent presentation of this action from a clinical point of view, it was necessary that I should go into detail as to the circumstances under which it was employed. Of course, it may fail me on further trial under similar circumstances, but there can be no shadow of doubt as to the relation between remedy and result in this case. There can be little less doubt that, but for this remedy, this patient would have been lost. It is not without interest in this connection, that I have, during the past year, in several instances, by the same method of using this agent, secured prompt and complete arrest of the vomiting of pregnancy. Within the past two months I saw a case in consultation, of a primipara at the beginning of the third month of gestation, who pre-

sented all of the phenomena of the pernicious vomiting of pregnancy. During the two weeks prior to my seeing her, she had vomited from ten to fifty times daily. She was now much exhausted and becoming rapidly emaciated; pulse was 120. As she vomited everything that was administered, not excepting even small quantities of cold water, I deemed the administration of remedies by the stomach out of the question; I therefore ordered the rectum to be washed out and an enema containing forty grains of chloral administered. The vomiting stopped at once. A few days subsequently it returned, but was promptly checked by a repetition of the remedy, since which time she has had no further trouble.

To my own mind, there can be but little doubt that the vomititng, in the case reported this evening, was due to acute peritonitis. The abdominal pain, the rapid pulse, increased temperature, the tympanites, and, finally, the character of the fluid ejected, would seem to settle this question. And yet, the sudden fall of temperature, the prompt and permanent relief of pain, arrest of vomiting—indeed, of all unpleasant symptoms—after the administration of the chloral, might raise a doubt in the minds of some. What explanation may be offered as to the action of chloral in arresting vomiting?

The mechanism and causes of vomiting are not well understood, but enough is known to establish the existence of a vomiting centre in the medulla closely related to the respiratory centre. The afferent impulses may come either from below upward, as in the vomiting of peritonitis, hepatic colic, or gastric irritation; or these impulses may come from a higher source than the medulla, as in the emesis caused by nauseous vapors, by the memory of past odors, taste, or sight, and by cerebral injury or disease.

In ordinary vomiting due to gastric disturbance, the afferent impulse follows the vagus, while the course of the stimulus when the cause is in the uterus or ovaries, is not so well known. From the intimate connection between the sympathetic ganglia of the abdomen and pelvic region, it is supposed that the impulse is conveyed through these to the epigastric region and thence by way of the pneumogastric to the medulla. Since, however, dogs can be made to vomit by the subcutaneous injection of tartar emetic after the vagi are cut, it is evident that there is some other route both for afferent and efferent impulses of emesis. Efferent impulses also travel through the phrenic and intercostal nerves. This additional route has been attributed to the sympathetic nerves, and to the presence of sympathetic ganglia near the cardiac orifice of the stomach, which are presumed to furnish the nervous energy necessary for vomiting when the main source of supply is removed by cutting the vagi.

Ordinarily the vomiting of peritonitis, hepatic colic, ovarian irritation, and other abdominal affections, is caused by the reflex stimulation of the normal mechanism of vomiting, and both the afferent and the efferent impulses are carried over the pneumogastric nerve.

In peritonitis the vomiting may be reflex and not due to the regurgitation of intestinal or biliary secretions into the stomach, since violent attempts at vomiting often occur when the stomach and intestines are empty. Besides, when the mesenteric nerves are cut in peritonitis or in intestinal obstruction the vomiting ceases, indicating that the emesis was reflex and that the course of the afferent impulse is through the mesenteric nerves.

Brunton has pointed out that chloral not only diminishes the reflexes in a notable degree, but that it also dilates the vessels of the intestines, exercising at the same time a marked paralyzing action on the nerves. Hence it would appear to answer two very important conditions in the vomiting of peritonitis. First, diminishing the intestinal reflexes which cause the vomiting, and second, partially paralyzing the mesenteric nerves, the route along which such reflex impulses travel. I do not mean here to advise the use of chloral in the treatment of peritonitis as a curative remedy, for its dilatation of the vessels of the intestine is really a contraindication, but its value as a symptomatic treatment in combating this most distressing factor should be appreciated and employed. Opium is apparently curative in this disease, since it will "prevent the reflex dilatation of the vessels which the local irritation would otherwise produce" (Brunton). While opium then must still be our sheet anchor in peritonitis, chloral deserves a trial in those cases in which vomiting becomes a dangerous feature.

In singultus, which probably differs from emesis only in the absence of coördination of all the muscles implicated in the latter, chloral has been recommended and found highly useful, by Brunton, Leavitt, Wood, Stillé, and Kingsbury.

In the vomiting of pregnancy, where the causes are so obscure and probably so various, we are forced to call the trouble reflex in character until its etiological factors are more clearly demonstrated. Certain it is that those remedies and methods of procedure for its treatment which have met with greatest favor are mostly directed toward a diminution of reflex irritation and spinal irritability (under methods of procedure, as above, may be included cervical dilatation, removal of inflammation, uterine displacement, etc.). These actions are possessed in a high degree by chloral, and must, in the absence of any convincing physiological data, account for its value in this affection.

The use of chloral in the vomiting of pregnancy is recommended, especially in enemata by Playfair, Leishman, Busey, Atkinson, Eulenberg, Richardson, of Boston, and Simmons, of Yokohama.

In conclusion, I would state my conviction that, while it should be given in large doses to be effective, it is not safe to employ the rules for rectal dosage usually followed in the administration of dry extracts and less soluble medicines.

If the rectum be cleansed, the dose ordinarily should not be increased more than twenty per cent. above the proper dose in the individual case *per os*.

CLINICAL HISTORY OF A CASE OF HEMORRHAGIC MALARIAL FEVER;

MICROSCOPICAL EXAMINATION OF URINE AND BLOOD; TREATED BY LARGE DOSES OF ARSENIOUS ACID; PROMPT RECOVERY.

BY BENJAMIN HOGAN RIGGS, M.D.,

OF SELMA, ALA.; EX-PRESIDENT MEDICAL ASSOCIATION OF ALABAMA, ETC.

ABOUT 1.30 o'clock, on the morning of Dec. 15, 1885, I was summoned to Eugene B., a white youth, aged over sixteen years, reported as being seriously ill with "yellow chills." It being an exceedingly inclement night, and not feeling well, I declined to go, but gave verbal directions for treatment, and wrote a prescription to be filled at the drug store. This young man had had many attacks of this dangerous malady since childhood, this being the third attack since August last, 1885. He was one of those in whom quinine always caused "hemorrhage from the kidneys" (?). Therefore, I had never been able to use the bark derivatives. In his two previous attacks this year and last year, I had "brought him through" with piperine, Dover's powder, calomel, tincture of iron, and extract of ergot.

His was thoroughly a case of malarial cachexy: he had a spleen as large as a peck measure, hard, sore, and extending down to the crest of the left ilium, and to the right of navel. He had purpuric spots on both legs, and had been under antimalarial treatment since previous attacks, but still had them. When this attack had come on he was taking as a tonic a mixture of ferri et quiniæ citrat., and syrup of ginger, unknown to him, with benefit to general health, but early morning and late night exposure, probably, induced a recurrence at this time. I gave the messenger a mixture of tinct. of chloride of iron, chlorat. potass., syr. lemon and water, about twenty-five drops of the iron at a dose, to be taken every two hours, until I came in the morning; and ordered a full dose of calomel to be taken at once, hot foot bath, and hot bottles in bed to promote diaphoresis.

On morning of 16th I called to see him; found he had had a very bad night; passed large quantities of port-wine urine; was now very sick at stomach; was drowsy; skin dry; fever gone; urine cleared up to the "meal-bran" look when cold; a little deeper color than natural when first passed, but clear; bowels had not acted well; ordered to stop iron mixture, and put on the compound iron and quinine citrate salt in 15 gr. doses to a teaspoonful of equal parts of syrup of ginger and water every two hours; Seidlitz powder to be given at 11 o'clock; hot bath to relieve symptoms of uræmia. Accidentally failed to get a specimen of the urine for examination.

Returned in two hours. Bath had made him feel better; bowels had not acted freely; still much nauseated; vomited matter of deep orange, almost red color, but when mixed with the water of the slop tub was yellow. Gave a hypodermatic of ¼ gr. of morphine, and $\frac{1}{120}$ gr. of atropine. Ordered another Seidlitz powder at 1 o'clock.

Was called in a hurry to see my patient at 2 o'clock, with information that he had another chill. I found him again freely passing port-wine urine, very much nauseated, very restless, and with high fever coming on. Ordered the hot bath again, as there was drowsiness, and I feared uræmic poisoning. The baths were taken in an old-fashioned bath-tub with plenty of warm water. I determined now to resort to the compound which was successful in the last two attacks—piperine and Dower's powder, but to add arsenic to it, as I had been informed of its successful use in such cases by Drs. Robert Cochran, Joseph Groves, and Adams, of this county. I ordered the following capsules, supplementing the Dover's powder by the hyoscyamus extract on account of the ipecac of the powder:

℞.—Acid. arsenious	. . .	gr. ¼.
Piperinæ	. . .	gr. ij.
Pulv. Doveri	. . .	gr. x.
Ext. hyoscyami	. . .	gr. v.—M.

Five capsules.

Sig.—One capsule every three hours. To be taken during the night and next day.

At 7 P. M. his temperature in the mouth was 105°; pulse 120, full and soft. Commenced the capsules at 8 P. M., and gave another at 11, 2, 5, and 8, same night. ¼ gr. of arsenic in twelve hours.

On the evening of the 16th I found him very sick; passing port-wine urine copiously; complained of pain and soreness in spleen. He says pain in the spleen inaugurated the chill on the previous night. Took a bottle of urine for examination.

17th.—9 A. M., found him much better, but complaining of nausea. Temperature 98°, pulse 116, Renewed the previous prescription; gave capsules at 11 and 2; he thus took $\frac{7}{20}$ gr. of arsenic in eighteen hours. At 6 P. M. to-day, temperature 98°; pulse 104; temperature remained normal. On night of the 16th had passed an ordinary chamberful of the dark urine. Some symptoms of œdema arsenicalis supervened this afternoon; so lenghtened the intervals of the arsenical doses; gave the three remaining capsules (of the second five) at 8, 2, and 7 o'clock the night of the 17th, thus giving ½ gr. of arsenic in thirty-five hours.

18th.—Doing well; more marked symptoms of arsenical impression. Took a drop of blood from tip of finger for microscopic examination. Patient looked exsanguine.

19th.—At 2 P. M. took another drop of blood from top of left ear for examination.

Patient convalesced after this steadily; was put on pill of citrate of iron and quinine, strychnine, lactopeptine, and arsenic, so as to take $\frac{1}{10}$ gr. arsenic daily; and to take at night a potion containing potassic iodide, ext. ergot fl., and ext. polymnia medalia fl. (bear-foot), for the enlarged spleen.

At this writing, January 6, is still on this treatment, and much better. Size of spleen reduced.

I am disposed to believe that full doses of arsenic constitute the best treatment for this fatal disease. It is safe to give it in $\frac{1}{8}$ gr. doses every three hours until the patient is relieved, or the full effect produced. In other words, the arsenic can be pushed safely until the eyes puff and have a purplish ring beneath them; the fingers feel stiff and puff up; the skin burns (to the patient) and itches; the stomach burns and gripes; there are thirst, dryness of the throat, and may

be a degree of constriction; tendency to looseness of bowels. These symptoms immediately disappear upon discontinuing the remedy.

Liquor potassæ arsenitis—Fowler's solution—represents, according to the last edition of the *United States Dispensatory*, nearly 1 grain of arsenious acid to each 100 minims; it takes, thus, one drachm and four-sixths to equal 1 gr. of arsenic. I have no doubt that it would be proper to give this elegant preparation in place of the arsenious acid. Twelve mimims might be given every three hours until some effect was produced, as this corresponds to $\frac{1}{8}$ gr. doses of the acid. The objection to giving arsenite of potassa or soda hypodermatically is its very irritating local effect. Four or five minims diluted with tepid water, in desperate cases, might be given every three hours for a while.

Dr. B. C. Adams, of Liberty Hill, this county, informed me a few days ago that he gave a patient, successfully, $\frac{1}{2}$ gr. arsenic in nine hours—*i. e.*, $\frac{1}{8}$ gr. at twelve, three, six, and nine o'clock, successively, beginning at twelve, noon, and the other $\frac{1}{2}$ gr. during the succeeding night and next day, at intervals of four hours, thus exhibiting 1 gr. in twenty-five hours. Dr. Jos. A. Groves, of Brown's, and Dr. Robt. H. Cochran, of Mortin's, this county, have also used this remedy, in this disease, with satisfactory results.

Appended is the report of Dr. C. J. Clark, who kindly made microscopic examinations of the specimens of the blood and urine which I collected. I was present during the examinations and verified his observations.

"*Dec. 18.*—A drop of blood from the tip of the finger showed normal blood disks, but I should say fewer than in the slides from healthy persons compared with it. The larger portion had the normal shape and size, but others were crenated, and otherwise misshapen, or reduced in size: while there were amorphous particles that might be the débris of red blood-corpuscles. A drop of water was mixed with this blood when first caught on the slide.

"*20th.*—A drop of blood from the tip of left ear, taken on afternoon of the 19th, was placed between two slides and compressed to thin it out, as it was a large drop, The bottom slide examined separately exhibited many blood corpuscles, while the top showed masses of amorphous materials taken for destroyed blood corpuscles, with some illy defined and misshapen disks.

"*17th.*—The urine was examined. A pint of fluid was brought of a dark wine color, looking as if it contained blood in abundance. Several slides were carefully prepared and examined with different powers. Not a blood disk could be found; nothing but a few epithelial cells and tube casts. I should say the color of the urine was due to the destruction of red corpuscles and the discharge of the hæmatin through the kidneys.

"Different powers were employed in these investigations, varying from 400 to 1600 diameters. Doubtless, in other cases with much engorgement of the kidneys, red corpuscles are discharged in the urine, along with a large amount of hematin from disorganized red corpuscles."

In 1869, Dr. H. S. Hudson, now of Summerfield, Dallas County, Alabama, and myself, made some microscopic examinations of blood taken post mortem from the portal vein, of a colored female dead of this disease, which were published in the *Richmond and Louisville Medical Journal* of July, 1870. We found the blood mass to be remarkably dense (as there was very little blood left in the body) and homogeneous. The blood corpuscles were deficient in number, irregular, and shrivelled. There were also a great many dark granules discoverable on the slides.

Prof. Joseph Jones, of New Orleans, examined a specimen of this urine, and reports as follows: "As a result of this examination, therefore, we have a urine of low specific gravity, loaded with casts of the tubuli uriniferi, filled with hæmatin, deficient in urea, abounding with biliary acids, coloring matter, and containing a small amount of albumen. I was astonished at the amount of bile contained in the specimen of urine, and the solid matters of the urine appeared to be chiefly those of bile."

EXTRAUTERINE PREGNANCY CHANGED TO INTRAUTERINE BY THE GALVANIC CURRENT.

BY AUGUSTUS STABLER, M.D.,
OF LAWRENCE, MASS.

SINCE reading Dr. Garrigues's article in THE MEDICAL NEWS of December 12th, on "Extrauterine Pregnancy Changed to Intrauterine by Faradization," there has occurred in my practice a similar case.

Mrs. ——, aged thirty, the mother of four healthy children, last menstruated August 12th. In September, at the expected time, the flow did not appear, but she suffered with all the other symptoms peculiar to the menstrual molimen: headache, disturbance of digestion, a feeling of weight and fulness in the pelvis, with more or less pain in the left side. I did not regard the absence of the flow as of much importance; or, indeed, the other symptoms, as she had always been subject to nervous disturbances at the period.

In November, at the expected time, the flow again was absent, and the other symptoms were intensified and prolonged. She thought her abdomen was growing larger, and feared she might be pregnant, as she was evidently getting fatter. There was, however, no morning sickness, and no apparent change in the breasts, and she had a leucorrhœal discharge, which had been absent in her previous pregnancies. On making a uterine examination I found the os patulous, and filled with the viscid discharge said to be pathognomonic of endocervicitis. This, taken in connection with the leucorrhœa, which did not come from the vagina, as no inflammation of the vagina was discovered, seemed to make it pretty clear that her symptoms came not from pregnancy, but from endocervicitis. I cautiously inserted the sound, and it passed in the normal direction, without any undue force, a distance of two and three-quarters inches. It was not followed by the expulsion of any fluid, little, if any pain, was caused, and the sound on withdrawal was entirely free from any stain of blood.

The examination satisfied me that there was no fœtus *in utero*, and the patient being quite fat I did not succeed in demonstrating any tumor in the abdomen.

In the absence of better proof of extrauterine

pregnancy, I determined to treat the endocervicitis. Applications of tincture of iodine and of nitrate of silver were made to the interior of the uterus. I also punctured the cervix with a tenotome and withdrew about an ounce of blood. Glycerine and tannic acid on cotton balls were placed in the vagina in contact with the cervix. This local treatment seemed to give temporary relief to the backache and leucorrhœa.

Having recently read of the success of Dr. Paul Mundé and other gynecologists with the galvanic current as a means of reducing chronic inflammations of the uterus, I determined to give it a thorough trial in this case, especially as her husband had a good battery in the house and was skilled in its manipulation. After providing him with an electrode that would enter only the length of the cervical canal, and instructing him in the method of its insertion through the speculum, I allowed him to make applications of a weak current from the negative pole, for fifteen minutes every night. These applications never caused her any pain, but, on the contrary, quickly relieved the flatulency to which she was subject, and were always followed by a good night's sleep. She thought the electricity was doing her much good.

About one week before the next menstruation was expected, I directed the interrupted current to be given in place of the continuous, hoping by this means to stimulate the dormant menstrual function, and bearing in mind that, in case of extrauterine pregnancy, this treatment would be the most likely to give good results.

On December 4th, the husband exposed the cervix with the speculum, and was preparing to apply the interrupted current for the first time, when by accident the patient touched the electrode with her fingers, and receiving a shock from it she refused to allow it to be applied to the uterus: the husband told me, subsequently, that he then noticed that the uterus had undergone a change. The cervix was broader and softer, and more easily reached than it had been at previous times, and there was a small light-colored object protruding slightly from the os, which he now supposes to have been a portion of the fœtus, probably the foot.

The next day, December 5th, she reported that the expected flow had come on a little ahead of time, but was attended with considerable pain. I ordered a saline purge, and insisted upon rest in the recumbent posture, and avoided all examinations or applications. The flow continued to appear and disappear, at irregular, short intervals, for about a week, until December 12th, when she had a fall in going down steps, which was followed immediately by severe pain, and about twelve hours after the fall a quantity of clotted blood was expelled through the vagina.

On the night of the 13th, the day after the fall, I was called in haste to her bedside, and found that, with very little effort, she had expelled a dead fœtus enveloped in its unruptured membranes, with placenta and appendages all perfect. The fœtus was apparently of about four months' development, which would correspond with the time elapsed since last menstruation. The woman has made a good recovery.

To sum up: What are the facts which are known in the case?

1. There was no fœtus *in utero* November 18th, as evidenced by the passage of a large Simpson's sound to the depth of two and three-quarters inches without causing pain, bleeding, or the expulsion of fluid; also evidenced by the fact that applications of tincture of iodine and nitrate of silver to the interior of the uterus caused no untoward symptoms.

2. It is probable that there was no fœtus in the uterus until December 4th, as applications of the galvanic current were regularly made to the interior of the cervix up to this time.

3. There was a fœtus *in utero* December 4th, as evidenced by the change in the position and shape of the cervix, as observed by the husband, the protrusion of a light-colored object, and the occurrence of slight hemorrhage next day, which continued at intervals, until the expulsion of the fœtus was hastened by the fall.

How are we to account for the slipping of the fœtus into the uterus after having been previously located elsewhere—probably in the Fallopian tube?

Dr. Garrigues thinks that the faradic current in his case was the efficient agent. In a case reported by Dr. McBurney, as in my case, the galvanic current was employed. Dr. Garrigues, in his able article, does not offer any rational explanation of the *modus operandi*, beyond the possibility that the fœtus may have been reduced in size by the current. I think a more rational theory is that the current induces, as is well known, contractions in the muscles through which it passes. That it is capable of inducing contractions in the uterus, is well known, and may it not also produce contractions in the hypertrophied walls of the tube? The contractions of the uterus may have a tendency to dilate the uterine orifice of the tube, as they do the os uteri, and, at the same time, the contractions set up in the tube may urge on the fœtus, and cause it to protrude into the uterine cavity.

Since writing the above I notice a letter by Dr. Paul F. Mundé, in THE MEDICAL NEWS of December 26, 1885, in which he gives substantially the same explanation, except that he holds, as a prerequisite to success, that the tubal orifice should be already dilated. This may have been so, but I do not think it was, when the galvanic current was first applied in my case. When applied in a weak current for a considerable length of time, it is well known that galvanism increases, in the neighborhood of the negative electrode, the excitability of motor nerves, as well as the nutrition and contractile power of muscle, and may thus induce increased development of the muscular fibres of the tube.

8 CHARLES STREET.

HOSPITAL NOTES.

AURAL CLINIC OF NEW YORK EYE AND EAR INFIRMARY.

Service of DR. SAMUEL SEXTON.

ACUTE INFLAMMATION OF THE MIDDLE EAR TRACT.

(Reported by DRS. W. A. BARTLETT and C. J. COLLES.)

THE following seven cases of acute inflammation of the middle ear tract are of interest, representing, as they

do, a group of cases which respond readily to a very simple course of treatment, by which various instillations and vigorous syringing, so often injurious, are avoided, and shown to be quite unnecessary, a cure being brought about, and pain effectually relieved, by simple remedies internally administered.

CASE I. *Otitis media purulenta acuta. Marked constitutional disturbance, fever, and very severe pain. Relief in twenty-four hours from administration of aconite and belladonna. Patient discharged cured in one week.*—*Feb. 11.* Female, æt. eight, had pain in left ear, with discharge, two years ago. She attends a public school, where she is constantly exposed to cold draughts of air from the windows, which are opened to admit fresh air into the room when overheated by the steam radiator. Three days ago, after attending school, patient complained of pain, tinnitus, and deafness in her right ear, accompanied by marked constitutional disturbance, nausea, vomiting, and fever. Pain also in the left ear this morning. On examination, the membranæ tympanorum were found to be intensely and uniformly hyperæmic, denuded, and bulging; no perforation, however, being visible. Patient could hear ordinary voice in both ears. She was restless and in much pain. Temperature 102.2°, pulse 130. The treatment consisted of minute doses of tincture of aconite and extract of belladonna, given at frequent intervals, to control the pain; calx sulph. (gr. $\frac{1}{60}$) every two hours. It was hoped that the inflammation would take a regressive course, and paracentesis, therefore, was not performed.

12th. The right membrane has been ruptured, the pain has subsided, and there is a watery discharge. Aconite and belladonna discontinued.

14th. Patient has been resting well, and is free from pain. The discharge from right ear is more profuse, and of a purulent character. Canal syringed, and powdered boracic acid insufflated. The left canal is red and tender, the membrane fleshy and bulging slightly, but no perforation. Continue calx sulph.

15th. Condition improved and discharge diminished. Boracic acid insufflated. Left membrane less bulging and injection subsiding. Calx sulph. (gr. $\frac{1}{60}$) every four hours.

18th, No discharge from right ear; canal filled with dry powder. The left membrane is clearing up. Calx sulph. discontinued.

CASE II. *Neglected case of otitis media purulenta acuta, and periostitis externa. Catarrh of upper air-tract. Decayed teeth. Poor physical condition. Discharged cured in fourteen days.*—Male, æt. fourteen, is a subject of nasal catarrh, and has suffered at times from pain in left ear, during past month constantly, in addition to which has been troubled with tinnitus and deafness in the same ear. After an exposure, eight days ago, left ear began discharging, accompanied by swelling and pain in the mastoid region. On examination the left membrana tympani is found bulging, injected, and fleshy in appearance. By the Valsalvan experiment, pus is forced through an opening in the posterior inferior segment. The left auricle is unduly prominent, owing to an extension of the periostitis externa, and there is a fluctuating swelling over the mastoid. Patient hears ordinary voice with left ear. Right ear normal.

The treatment was the same as in Case I. The abscess was incised. Pain ceased entirely in two days, and discharge in five. Two weeks afterward the left drumhead was found to be healed, but opaque and lustreless; patient could, however, hear low voice distinctly with left ear.

CASE III. *Acute inflammation of attic and membrana flaccida. Severe pain, relieved in two days. Discharged, cured, in two weeks.*—Male, æt. eight. No previous ear trouble. For past five weeks much pain, at times very severe, in right ear, with scanty discharge. Loss of sleep and appetite. On examination free purulent discharge from right ear is found, and only the membrana flaccida of drumhead is seen, the same being fleshy in appearance and concealing the upper segment of the membrane. Hears ordinary voice with this ear. Left ear normal.

Aconite and belladonna were given to allay pain. Calx sulph., at first every two hours, afterward less frequently. Pain subsided in two days, and discharge ceased in eight. Fourteen days later the canal dry, and drumhead (right) resuming rapidly its normal condition.

CASE IV. *Foreign body in ear, subsequently acute otitis media purulenta, caused by sea-bathing. Carious teeth. Severe pain, relieved in two days. Discharged, cured, in eight days.*—Male, æt. eighteen, had a pea removed from left ear about ten years ago, and since then hearing in that ear impaired. Twenty-four hours subsequent to sea-bathing five days ago, patient complained of pain, tinnitus, and deafness in left ear, which have prevented sleep. Yesterday first noticed discharge. On examination the walls of left meatus externus are found swollen and denuded; the drumhead inflamed and bulging, with small perforation in the posterior inferior segment. Only loud voice heard in left ear. Right ear normal. Catarrh of upper air-passages not marked. One carious tooth in left lower jaw.

The treatment here was the same as in Cases I., II., III. Pain had entirely ceased by the second day, the discharge being copious. The latter, however, ceased by the eighth day, when drumhead was found to be clearing up.

CASE V. *Acute inflammation of the middle ear. Autophonia. Pain relieved in three days.*—Male, æt. twenty-seven, has long been subject to earaches. Head catarrh not marked. Whilst working is obliged often to stand knee-deep in water. For the past week pain and throbbing in left ear, accompanied by autophonous phenomena. Has used instillations of laudanum, but with no relief from pain. The examination shows left canal with muco-purulent matter, the drumhead fleshy in appearance with a small perforation in the posterior inferior segment. Hears ordinary voice with affected ear. Right ear normal.

Treatment as in previous cases. Pain and discharge had ceased by the third day. The dry powder in canal was left undisturbed for a time.

CASE VI. *Acute purulent inflammation of both middle ears. Frequent "colds." Rhinitis. Hypertrophied tonsils. Carious teeth. Discharged cured in eleven days.*—Female, æt. eight, long subject to colds in the head, toothache, and pain in the ears. After exposure four weeks since, had pain, tinnitus, and deafness in right ear, followed shortly by a discharge. These symptoms ceased in one week, but reappeared

three days ago, accompanied by pain and a discharge from left ear.

Both canals were found filled with purulent matter. The right drumhead not seen, the left uniformly congested and bulging. Ordinary voice heard in both ears. Rhinitis marked and tonsils hypertrophied. On the right side of lower jaw were two carious teeth.

The same treatment as in the other cases was followed. Pain had entirely ceased by the second day. Insufflations of boracic acid powder were made every third day, and by the eleventh day the discharge had ceased. Patient regained normal hearing in three weeks.

CASE VI. *Acute purulent inflammation of middle ear. Severe pain, relieved in two days.*—Male, æt. three. No previous ear trouble. For past five weeks child has been suffering with pain in right ear and discharge. Pain especially severe during last few days.

On examination right canal found filled with purulent matter. Membrane could not be seen. Hears ordinary voice with right ear, low voice with left,

In this case also the treatment mentioned above gave satisfactory results, the pain having entirely ceased in two days, the discharge being very slight. Fourteen days later, when patient was next seen, the canal was found to be dry and the membrane clearing up. There had been no discharge for several days. Patient could hear low voice in affected ear.

It is notable that in the case where inflammation was confined to the attic mainly there was less deafness than where the antrum was the principal seat of trouble.

MEDICAL PROGRESS.

CHROMIC ACID IN DISEASES OF THE UPPER AIR-PASSAGES.—RETHI records the use of chromic acid as a caustic application in over sixty cases, including chronic hypertrophic rhinitis, adenoid vegetations in the nasopharynx, chronic hypertrophic pharyngitis, and circumscribed swellings in chronic laryngeal catarrh. One or two crystals of the acid are placed on the end of a silver sound, which is then gently heated to remove all water of crystallization. If the heating be too rapid, or be continued till the film formed at the end of the sound assumes a green tint, the caustic properties of the acid are lost. Prior to the application the parts affected are washed with a 5 to 10 per cent. soda solution, which washing is repeated after the burning. No evil after-effects were noted in any case.—*Centralb. f. Chirurgie*, Jan. 2, 1886.

THE NATURE OF NERVE FORCE.—In contradiction to the view that nerve fibres are fatigued by the transmission of stimuli, BOWDITCH, of Harvard, has, in the following experiments, conclusively shown the absence of such fatigue in the nerves of warm-blooded animals.

A cat was etherized, and the sciatic nerve divided near the sacrum. A pair of shielded electrodes was then placed upon the same nerve lower down in the thigh. The tendon of the tibialis anticus was dissected out and connected with a lever which recorded the contraction of the muscle on the smoked paper covering a cylinder revolving once in twelve hours. The secondary coil of an ordinary induction apparatus was then connected with the electrodes and the minimum intensity of stimulation requisite to produce a tetanic contraction of the muscle was determined. The animal then received a dose of curare (0.007–0.01 grm.), sufficient to prevent muscular contractions, and the irritation of the nerve was steadily maintained while the animal was kept alive by artificial respiration. In the course of an hour and a half to two hours the curare was so far eliminated that the stimulation of the nerve, which previously had been without effect, began to produce muscular twitches which, as the elimination of the drug progressed, became more frequent and more violent. A true tetanus, however, was never observed.

In some of the experiments a second dose of curare was given, when the muscle began to twitch, and the experiment continued till the drug was a second time eliminated. In this way it was found that stimulation of the nerve lasting from an hour and a half to four hours (the muscle being prevented from contracting by curare) did not exhaust the nerve, since on the elimination of the curare the muscle began to contract.

Physiologists have long been in the habit of comparing nerves to telegraph wires, since they seem to be indifferent conductors transmitting impulses equally well in both directions.

It would appear from these experiments that the absence of fatigue in consequence of activity is another very interesting point of resemblance.—*Journal of Physiology*, vol. vi. No. 3.

REMOVAL OF THYROID BODY.—HORSLEY has presented before the Société de Biologie the results of his observations upon the effects of the removal of the thyroid body in monkeys. In the animals so treated the wound healed by first intention, death occurring, however, in from five to six weeks, with all the symptoms of myxœdema. There is at first a trembling of the hands, analogous to that seen in exophthalmic goitre, later functional paralysis, resembling paralysis agitans, with the early appearance of cretinism, then death, with sudden fall of temperature.—*Gazette Hebdomadaire*, Jan. 8, 1886.

ON THE ACTION OF ANTIPYRIN UPON THE TEMPERATURE AND TISSUE CHANGES OF CHILDREN DURING FEVER AND IN HEALTH.—DR. JACUBOWITSCH has detailed his observations upon the use of antipyrin in the following eleven cases, viz., four of typhoid, one of tubercular meningitis, two of miliary tuberculosis, and four children in good health. The experiments appear to have been conducted with thoroughness and care. The dose given within twenty-hour hours varied from 15 grains to a child of two years old, to 105 grains to a healthy child of seven years. The following were the results: Antipyrin lowered the temperature in all cases, but to a very slight degree in the healthy children. The amount of fall in the temperature did not always depend on the dose. After even the largest doses, the temperature did not remain at its lowest point for more than twenty hours. The greatest fall occurred about midnight, after which the temperature gradually rose. In healthy children, even large doses fail to lower the temperature to the same extent as in the feverish. Young children take large doses well for from one to two days. In most of the cases the quantity of urine was diminished to the extent of nearly one-half; it was very concentrated, and the specific gravity was increased. The

quantity of urea, uric acid, sodium chloride, phosphoric acid, and sulphuric acid was notably diminished during the use of antipyrin. Forty-eight hours after the last dose, the daily quantity of all these urinary constituents was greater than before the drug was given. The author feels some hesitation in recommending the use of antipyrin in fever cases, because, in spite of its undoubted antipyretic power, it could not safely be used for any length of time, if the remarkable retention of the products of oxidation which he observed is confirmed by further experiments.—*Edinburgh Medical Journal*, February, 1886.

THE USE OF OIL OF TURPENTINE FOR THE REMOVAL OF INSECTS FROM THE EAR.—KÖHLER, of Posen, has for six years discarded the use of tobacco, chloroform, and instruments in the removal of minute insects from the ear. He recommends that the head be inclined to the sound side, and the external meatus filled with oil of turpentine, which should be allowed to remain for five minutes. At the expiration of this time the ear is washed out with a syringe, with the almost constant result of removing the intruder.—*Revue de Thérapeutique*, Jan. 15, 1886.

ANTIPYRIN AND CALOMEL COMPARED IN PNEUMONIA.—The *St. Petersburg Weekly Clinical Gazette* publishes some observations which have been made by DR. POSADSKI, under the direction of Prof. S. P. Botkin, on the comparative results of the antipyrin and calomel treatments in croupous pneumonia. He thus treated a group of twenty-five cases with antipyrin alone, giving from half a gramme to two grammes (seven and a half to thirty grains) for a dose, and one to eight grammes (fifteen grains to two drachms) per diem. A second group of twenty-three cases, as similar as possible to those of the first group, was treated with calomel in doses of one-eighth of a grain four times a day. The average age of the patients in the first group was twenty-seven years and a half, and that of those in the second twenty-five years and a half. Those treated with antipyrin retained their full consciousness, but in the course of two or three days failed greatly in strength, the heart's action becoming exceedingly weak. They suffered from cough, and with difficulty expectorated a small quantity of slightly tinged sputum. After the first few doses there was a fall in the temperature, but not of a permanent character; sometimes, indeed, there was no fall at all, and when there was, notwithstanding the continuance of the drug, a rise followed. The crisis took place with a fall of temperature on the average on the seventh day of the disease, the mean number of days of fever being 8.1, but the local physical signs lasted 13.5 days. Complications occurred in nearly all the cases, sometimes being of a serious nature, collapse even being noted. In the urine there was nearly always albumen in considerable quantity, also antipyrin. The fall in weight averaged 20.34 zolotniks (about twenty-seven ounces), which was less than the mean fall of the patients treated with calomel, but the latter recovered their weight more rapidly during convalescence. When the doses of antipyrin were frequent, vomiting was often induced, and in two cases an antipyrin rash made its appearance. Those treated with calomel frequently presented a typhoid condition, and in some cases there was delirium. They were not much distressed by cough, the sputum was expectorated easily and in considerable quantity, and they did not suffer from sweats. The temperature rose high. The mean duration of the fever before the critical fall was 7.1 days, which was generally accompanied by drenching perspiration. The local physical signs lasted on the average nine days (against 13.5 in the other group). There was rarely albumen in the urine, and when it existed there were only traces. Complications were infrequent. The general conclusion arrived at was that antipyrin, in spite of its power of reducing fever, has no beneficial effect on the course or result of the disease.—*Lancet*, Jan. 30, 1886.

HOPEINE AS A HYPNOTIC.—ELOY records several cases in which hopeine was employed with advantage as a hypnotic. The mean daily dose for an adult was found to be three-tenths of a grain, and was best administered in pill form. Eloy summarizes his results by describing hopeine as a fairly reliable hypnotic, of relatively slight toxicity, which is indicated in cases where opium cannot be prescribed, and which is useful in insomnia where pain is not the cause.—*L' Union Médicale*, Jan. 23, 1886.

EFFECTS OF COCAINE ON THE CENTRAL NERVOUS SYSTEM.—In a paper read before the Chicago Medical Society, DR. D. R. BROWER thus summarizes his experience as to the use of cocaine in various neurotic troubles:

1. Cocaine, in small or moderate doses, is a cerebral stimulant, but produces derangement of the digestive and assimilative functions, and diminishes the elimination of waste products.

2. The use of cocaine in the alcoholic and opium inebriates is not satisfactory; while it is a more or less perfect substitute, yet its use is attended with greater danger than alcohol or opium.

3. The use of cocaine in mental depression, if we carefully guard against the depressing effects of the drug upon digestion and assimilation, will often give better results than any drug hitherto used.

4. The use of cocaine in neurasthenia is a valuable addition to the treatment.

5. The drug, if administered in large doses persistently, causes a very marked deterioration of the central nervous system, producing a profound cerebral neurasthenia, and may produce such a malnutrition of the cerebrum as to develop insanity.

6. Cocaine, occasionally, in doses heretofore regarded as small, produces alarming depression of the central nervous system.—*Am. Prac. and News*, Feb. 6, 1886.

ANTIDYSENTERIC POWDER.—The following formula is praised by SCHMITJAN, as being laxative and antiseptic, and at the same time possessing a beneficial topical action upon inflamed and ulcerated surfaces, comparable to the action of the sulphurous waters:

Sulphur, sublimed and washed,
Powdered fennel seeds . . . āā 1 part.
Powdered sugar,
Powdered gum-arabic . . . āā 2 parts.

Mix. A teaspoonful every three hours, in the subacute or chronic forms of dysentery. The treatment is commenced by an emetic of ipecac.—*L' Union Médicale*, Jan. 17, 1886.

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SATURDAY, FEBRUARY 27, 1886.

THE PHYSICAL SIGNS OF MITRAL STENOSIS.

IN THE NEWS of Feb. 6th we referred to certain problems in the general pathology of mitral stenosis, and we propose, on this occasion, with the help of the valuable papers of DRS. FLINT and BROADBENT, in the *American Journal of the Medical Sciences*, Jan. 1886, to discuss briefly the physical signs of this important condition.

While, as a rule, practitioners readily make a diagnosis in cases of mitral regurgitation or of aortic valve disease, the reverse may be said to hold good of mitral constriction, which, as Broadbent says, presents greater difficulties in diagnosis than any other disease of the valves. And yet, in many instances, when once the characters are known, no affection is more quickly or more easily recognized. The chief trouble arises from the fact that the physical signs in a given case may be variable at different times, and unless this is understood serious confusion may result. Broadbent's careful study of this condition has led him to recognize three stages of the disease. In the first stage, not much change is noticed in the dimensions of the heart, but the pathognomonic sign is a rough, blubbering, vibrating murmur preceding the first sound and heard in a limited area at the inner side of, and usually a little above, the apex beat. On palpation a thrill is perceptible to the hand at the same spot. The peculiar limitation of the murmur and thrill is one of its most remarkable characters. By the great majority of writers the rough presystolic bruit is held to be distinctive of mitral stenosis, but Flint brings forward evidence to show that in very rare instances it may be present without constriction of the orifice. As a result of backward-pressure in the pulmonary circulation, the second sound at the second left costal cartilage is accentuated, and from a lack of synchronism in the closure of the aortic and pulmonary valves there may be reduplication. To these well-recognized signs Broadbent adds another, the intensification of the second sound at and beyond the apex.

The second stage is characterized by the disappearance of the second sound at the apex and by the short sharp valvular character of the first sound, which, in reality, resembles closely the second sound. Indeed, as Balfour pointed out, the mistake is very commonly made, and the murmur is regarded as a rough systolic, followed by a sharp second sound. It may be extremely difficult, in these cases, to determine accurately the relation of the sounds to the cardiac systole, particularly if the action is rapid, but by finding a spot where both sounds are audible and distinct, and following them from this point, it can usually be determined which of the two disappears as the apex is approached. A satisfactory explanation of this remarkable alteration of the first sound has not been given. It is much more intense and valvular than when the mitral curtains are normal. Flint holds that it is due to the changes in the valves; Broadbent ascribes, and, we think, more correctly, the modified sound to the ventricular wall. The ventricle is imperfectly distended, and at the first movement of contraction the walls meet with no resistance, but are "suddenly brought up and made tense when resistance is encountered, and so produce the sharp sound." The disappearance of the second sound at the apex is accounted for by the overlapping of the left ventricle by the large right chamber, which occupies the apex, and thus prevents the conduction of the aortic sound to the surface; and, again, the diminished output of the left ventricle does not fully distend the aorta, and the recoil on the valves, which causes the sound, is consequently weak. In this stage there may also be heard a mitral diastolic murmur, preceding the pre- or auricular-systolic murmur, and corresponding to the period of active dilatation of the ventricle. As Dr. Flint remarks, this murmur claims more attention, clinically, than it has hitherto received.

The third stage is characterized by the disappearance of the presystolic murmur altogether, and there is heard only the loud, sharp, first sound and, perhaps, a systolic tricuspid murmur. The true state of affairs may now be completely overlooked in the absence of a murmur and of marked hypertrophy. Broadbent states that he has known the heart at this stage to be pronounced normal. There can be no question of the very common disappearance of the presystolic murmur in the late stages. Cases are frequently sent to the post-mortem room in which the murmur has been absent during the stay in hospital, and yet the

mitral constriction has been marked. And again, in cases admitted with pulmonary complications or dropsy, the presystolic murmur may not be present on admission, but may develop under observation, as the serious symptoms subside. Broadbent attributes the disappearance of the murmur to the establishment of tricuspid stenosis, and reflux into the right auricle, which so lowers the pressure on the pulmonary veins and left auricle that the force of the current through the mitral orifice is not sufficient to generate sonorous vibrations.

The condition of the mitral segments in stenosis is such that complete closure during ventricular systole is impossible, and we must suppose more or less regurgitation. A systolic murmur is not, however, always audible, though it can sometimes be developed when the vigor of the heart's action is increased by exercise. But there may be no regurgitation even when the valves are quite incompetent, for the pressure in the auricle may be such that no reflux of any moment can take place into it and the blood from the ventricle escapes more readily into the aorta, where there is a minimum pressure.

So long as the presystolic murmur is well marked and both sounds can be heard to the left of the apex, patients with mitral stenosis do not appear to suffer much inconvenience, and Dr. Flint testifies to the tolerance of this state for years. In the second and third stage, though not necessarily attended with serious symptoms, the patient suffers more or less inconvenience, and there are evidences of an embarrassed circulation.

What seems so clear and distinct on paper may, however, present an inextricable problem when the stethoscope is placed over a rapidly acting heart, but in any case the difficulty in diagnosis will be materially lessened by a careful study of the directions so admirably laid down by Dr. Broadbent.

DILATATION OF THE UTERINE CAVITY.

DILATATION of the cervical canal is an operation not unfrequently required for diagnostic or for therapeutic purposes; in the former, for example, for the recognition of a neoplasm in the uterine cavity, and in the latter to make its removal possible, or for the removal of remnants of the ovum therein remaining after miscarriage or labor. This dilatation was, for a time, very generally effected with sponge tents, but the danger of septicæmia has led to their almost entire abandonment. Sea-tangle in some degree displaced sponge, but now most of those who use gradual dilatation prefer tents of tupelo. But there is an objection to all three of these in the fact that the dilatation requires several hours, or, it may be, two or three days, and the longer the period occupied the greater the danger of septic infection.

The late Dr. Peaslee, many years ago, devised a series of metal dilators, but these were more for local effect than for obtaining ready access of fingers or instruments to the uterine cavity. Hegar has made hard-rubber dilators, conical at the uterine end, and having the external end flattened so as to form a handle. Independent of the handle, they are five or six inches in length, and several constituting the set, their successive increase in diameter is only one millimetre; they are numbered so that they may be used in continuous order until sufficient dilatation has been accomplished. The dilators are thoroughly washed and disinfected after being used; when again employed they are dipped in a five per cent. solution of carbolic acid, and each one, before its introduction, is covered with five to ten per cent. carbolized oil. In general, an hour, often less, is sufficient time in which a dilatation permitting the introduction of the finger into the uterine cavity, is accomplished. Hegar justly observes that the advantages of this practice are evident. Complete dilatation is made much more rapidly than with the sponge or by other means, and is much more agreeable for the physician, and especially for the patient. The antiseptic method can be strictly applied. The hard-rubber, which is smooth, does not present the inconveniences of dilators that change in volume. The brief duration of the operation, greatly lessens the danger of infection. Having used Hegar's dilators several times, we greatly prefer this method to that of dilating with any of the various tents.

Quite recently, another method of dilating claims professional attention: it is called "the new method" of Professor Vulliet to effect dilatation of the uterine cavity, in conditions which permit direct inspection of this cavity," and is described by BÉTRIX in the January number of the *Nouvelles Archives d'Obstétrique et de Gynécologie*. In this method the patient ocupies the knee-chest position, and the perineum is lifted up by a Sims's speculum, as large a blade as possible being used; the next step is by means of a uterine sound, or a urethral bougie, or some similar instrument, or a two-bladed dilator, to begin the process of dilatation. Following this, is the introduction into the uterus of iodoform cotton tampons; these are small, none larger than an almond, and have been prepared by having a double thread passed through each, after which the cotton is dipped in a 10 per cent. ethereal solution of iodoform, dried rapidly, and then kept in a well-stopped flask.

One after another of these cotton balls is pressed into the uterus until the cavity is filled; the threads hang out of the vulva and may be tied together so that all the tampons may be removed at once. They are left in the uterine cavity for twenty-four, or even forty-eight hours, when they are removed; if necessary, the cavity is washed out and fresh tampons, in a greater number, introduced; these in turn are removed

and others introduced, the number being each time increased. If a rapid dilatation is necessary after the first applications of the iodoform tampons, the uterine cavity being in a state of complete asepsis by the former means, laminaria may be used, three or four of such tents being introduced in a single bundle. But the laminaria causes more pain than the cotton, it necessarily produces some traumatism, and it is impossible to have the tents completely aseptic; the cotton alone will always cause complete dilatation, though requiring a much longer time than when assisted by the means just mentioned. When the dilatation is completed and has been regularly made, the neck is effaced as completely as it is at the beginning of labor.

The time required for dilatation varies according to the state of the uterus and the degree of the resistance of the neck; in one case of fibrous polypus, the interior of the uterus was visible on the third day, in a case of cancer nine days were required, while in a third patient it was not until after five weeks' dilatation that this end was attained; usually a period of fifteen days is necessary.

After such dilatation photographs of the interior of the uterus have been taken, and also moulds both of rubber and of plaster of Paris have been made.

Such complete dilatation that the entire interior of the uterus is made visible, must be rarely necessary for diagnostic or for therapeutic purposes, and therefore a period of fifteen days, the average time for such expansion, can only very seldom be advisable; in almost all cases a week, or even less will be sufficient time to occupy with this process. Even then the contrast between seven days consumed in finding out what is the pathological condition, and preparing for a suitable operation, seems a very long time in comparison with a single hour which will be occupied in attaining the same ends by Hegar's dilators. Nevertheless, we see that Prof. Vulliet's plan presents some important advantages in certain cases, and it must take its place among the valuable means of diagnosis in some intrauterine diseases, and prepare the way for their appropriate treatment.

RESPONSIBILITY IN THE PREPARATION OF MEDICAL CERTIFICATES.

A SUIT was recently tried in one of the courts of this city against two physicians who, it is alleged, negligently certified to the existence of insanity, through which damages resulted from subsequent confinement in a hospital for the insane. In the city of New York a physician has been sued for reporting, erroneously, as it was alleged, a case of smallpox which was removed to a hospital under the regulations of the Board of Health. It is not proposed to retry these cases in the medical press, or to enter into the merits of the mooted issues which terminated unfavorably for the defendants. The nature of the responsibility of medical men who perform duties delegated to them or required of them by law, is, however, a question in which the whole profession has an interest and it should assert its prerogatives.

The law, in assuming to regulate matters pertaining to the public health, requires that the existence of contagious diseases be reported to a central designated bureau. In the case referred to, a report of a supposed case of smallpox was made, but it turned out that a difference of opinion subsequently existed among the doctors as to the exact nature of the disease, and, although the physician did not convey the patient to the hospital but she was removed there by the Board of Health, yet the learned judge instructed the jury that the doctor started the machinery, and they accordingly brought in a verdict of $500 damages.

The lunacy law of Pennsylvania, aiming to surround the admission of the insane to hospitals by greater safeguards, provides for their commitment on sworn certificates of two physicians. It also provides for the creation of a body of qualified examiners, and defines their qualifications. A conscientious performance of a duty enjoined by law for the preservation of the public health, and the exercise of the functions of a qualified examiner in lunacy by physicians declared by law to be qualified, ought to be accompanied by an assurance of exemption from the consequences of a possible erroneous judgment. It ought not to be assumed that an opinion about a question, in its nature strictly scientific, can be infallible. Is not the overburdened calendar of our Supreme Court a sad commentary on the fallibility of the judgment and errors of the courts below! It can hardly be held, as has been assumed, that a medical certificate which may prove to have been erroneously made was an act in the nature of malpractice. The physician may in the one case perform a compulsory duty, and in the preparation of a lunacy certificate he does not advertise his ability to furnish an unquestionable opinion, but he may do what the law states plainly he is qualified to perform. In the execution of acts which are compulsory or ministerial, unless it can be shown that the physician was guilty of fraud, negligence, or of being a party to a conspiracy, there should be an exemption from penal consequences. The time has arrived when there should be a judicial determination of the privileges and rights of the medical profession in their newly created relations to the community.

In view of the facilities which exist for vexatious litigation, there is much hesitation on the part of physicians to furnish a certificate of insanity, even in cases in which, in their judgment, it clearly exists. Some positively decline, while others do not act until the disease is so manifest that an average juryman may

come to a conclusion. Others are disposed to exact an indemnity bond or charge large fees to cover the risks they feel they assume. A procedure ostensibly intended to protect the sane may in its practical operation become the means of doing injustice to that class of the insane whose only hope of recovery is treatment in the early stage and before decided changes and chronic conditions have been permanently established. It is public policy to encourage prompt treatment of the insane, and the recognition of the earliest symptoms. It is not believed that with the safeguards embodied in the law, with a Lunacy Committee possessing ample powers of inspection, with its doors always open, any serious abuses or mistakes can occur. The profession may, under the circumstances, properly ask the Committee of Lunacy to consider whether some further legislation is not necessary to protect its members from vexatious litigation, or that the Courts, on a proper occasion, will more clearly define and determine their rights, privileges, and exemption from responsibility.

THE USE OF ANTISEPTICS IN LABOR.

THE *Journal d'Accouchements* of January 30th contains a brief report of the Maternité de Liége for the year 1885, by the Surgeon-director, DR. N. CHARLES. Of three hundred and forty-four women admitted during the year only two died; there were fourteen cases of mild septicæmia, but in eighty-five per cent. of the entire number of women delivered the puerperal period was absolutely normal. There were three cases of eclampsia, and also three of placenta prævia; there were ten applications of the forceps, three podalic and two cephalic versions, and eight cases of perforation of the cranium, seven of these being followed by the use of the cephalotribe, or of the cranioclast; beside these, some other operations were done, making in all thirty-six operations. So low a mortality and so slight a morbidity in a lying-in hospital are worthy of attention. Dr. Charles attributes these happy results to the use of corrosive sublimate as an antiseptic, but he especially insists upon the most minute antiseptic precautions from the end of pregnancy, or, at most, from the first time touch is made during the labor.

A recent communication from CHIARA, an abstract of which is found in the first number of the *Nouvelles Archives d' Obstétrique et de Gynécologie*, also urges the importance of antisepsis during labor. The author believes that in order to render the utero-vaginal canal aseptic during the expulsive period, or at the moment of beginning any operation, the spray of carbolic acid should be used, and that after the labor thorough and large washing of the utero-vaginal canal should be made by a corrosive sublimate solution, 1 to 1000, but from this time no examination of the genital organs is performed, and no injections are used.

Notwithstanding the high reputation of Chiara, it is doubtful whether, even in hospital, still less in private, practice, obstetricians will generally adopt the plan of delivery under carbolic acid spray. The exposure, discomfort, and the possible chilling of the patient, are serious objections. Moreover, we would hesitate to use so strong a solution of the corrosive chloride as advised by Chiara, fearing possible poisoning, and, besides, there is good reason to believe that a solution not half so strong is equally efficient.

Abstinence from vaginal injections after the thorough cleansing following labor is a part of the practice which will be most readily accepted, for, unless special symptoms occur, there is no indication for such injections.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, February 18, 1886.

THE PRESIDENT, A. JACOBI, M.D., in the CHAIR.

DR. H. D. CHAPIN read a paper on

RHEUMATISM IN EARLY LIFE.

It is a subject, he said which, in view of its great importance, has not received sufficient attention on the part of the profession. Although generally very insidious in its advances, rheumatism is an affection which is continually crippling children for life. Having stated that his remarks would be principally based on an analysis of 76 cases which had occurred under his own observation, he gave a *résumé* of the opinions of various authorities on the diseases of children in regard to the subject, referring particularly to a monograph of Dr. A. Jacobi, published in 1875, in which it was stated that rheumatism was frequent and insidious in early life. J. Lewis Smith had stated that it is scarcely less common in children than in adults, but that it is frequently overlooked. Most authors, however, seem to think that it is not a very common disease in childhood.

Of the 76 cases referred to, the number of cases at different ages were as follows:

6 months	1
11 "	1
20 "	1
3 years	1
4 "	2
5 "	4
6 "	6
7 "	3
8 "	6
9 "	9
10 "	10
11 "	8
12 "	7
13 "	9
14 "	4
15 "	2
17 "	2

During infancy the disease is, apparently, not very common. In Dr. Chapin's three cases, occurring in infants of six, eleven, and twenty months respectively, however, there were well-marked attacks of acute rheumatism, and the diagnosis was rendered the more positive by the fact that in each of the three instances one or both of the parents had also suffered from rheumatism.

In regard to heredity, he said that it seemed to him an undoubted fact that some state is inherited which will develop rheumatism under favorable conditions. It is a rheumatic tendency, rather than the disease itself, that is inherited, as is the case in syphilis. Having referred to the statistics of other writers, he stated that in the great majority of his own cases either one or both of the parents had had rheumatism.

In early life rheumatism attacks more females than males. Of his own cases, 50 were girls and 26 boys; and in 69 cases tabulated by Goodhart, 42 were in girls and 27 in boys.

As to the part of the body affected, in 43 out of his 76 cases the lower extremities alone were affected, and in 40 of these the knees were involved. In 23 cases both the upper and lower extremities were affected, and in 3 the upper extremities alone. In two cases the plantar surface of the feet bore the brunt of the attack.

Pain, as a rule, is not very severe. In children able to express their feelings, the trouble is described more as a stiffness and soreness of the limbs. There is generally little or no rise of temperature. A decided tendency to repetition was observed, and in one case there were as many as six distinct attacks.

A general feature is marked hydræmia, and this is to be regarded as an important factor both as regards diagnosis and treatment.

The absorbing interest in rheumatism in early life, however, centres about the heart. Senator states that the younger the patient the greater the danger of cardiac complications. Having quoted various other authorities in regard to the frequency of heart-trouble, Dr. Chapin said that in 26 out of his 76 cases, or one-third the whole number, there was organic valvular disease, and in 18 of this number there was a mitral regurgitant murmur. Of Goodhart's 69 cases, 15 had organic disease of the heart, and 5 others had pronounced symptoms of cardiac disturbance. It is worthy of remark that endocarditis is by no means so serious in children as in adults, and therefore it may entirely escape observation. It appears to him, he said, that the heart becomes affected only after several attacks of rheumatism, and hence it can be seen how very important it is to make an early diagnosis of the latter disease, and place the patient under appropriate treatment, in order to ward off subsequent attacks, with increased danger of cardiac complication. The proportion of these cases in which the heart becomes involved, as compared with the proportion in adults, has not as yet been definitely determined.

Chorea, as is now generally recognized, has a direct connection with rheumatism. In thirty-two cases of chorea which he had tabulated in a paper read before the New York Neurological Society in 1883, Dr. Chapin found that twenty-two had been preceded, or were accompanied by rheumatism: and he thought it possible that the two affections, as well as the heart trouble so frequently met with in each, were due to a common cause. In individuals in whom all these are found, the usual sequence is, first, the rheumatism, then the chorea, and finally the cardiac affection. There can be no possible doubt that rheumatic children are peculiarly liable to suffer from chorea. Again, parents with rheumatic tendencies may have children affected with chorea, but not with rheumatism. In many of Dr. Chapin's cases chorea did not appear until after several attacks of rheumatism.

In rheumatism in children the mucous as well as the serous surfaces are liable to be attacked. Goodhart says of tonsillitis, that there is a growing frequency of assertion that it is a rheumatic ailment, generally as preceding the attack. Dr. Chapin had met with fifteen instances in which acute tonsillitis appeared before, during, or after attacks of rheumatism. This association of the two affections cannot be proven to be anything more than a coincidence; but it is so frequent as to have attracted the attention of a number of observers.

Having mentioned other complications which he had seen, such as pleurisy (in some cases), cellulitis, and anterior poliomyelitis, he went on to speak of the diagnosis, which, he said, must be generally based on a collection of quite a number of symptoms. We must often depend on what Goodhart aptly calls the composite of the disease. Generally speaking, rheumatism in children is wanting in the severity of any one symptom. One point is, that rheumatic pains usually go from one joint or set of muscles to another. Others to be noted are, the history of the parents, the condition of the heart, the presence or absence of chorea, hydræmia, indigestion, and throat trouble. It is probable that rheumatism is sometimes mistaken for malaria, since it is found that salicylate of sodium will give relief in cases where quinine is not followed by beneficial results. It must not be forgotten, however, that quinine is often very useful as a tonic in rheumatism.

As to the pathology, Dr. Chapin believes that the acid theory is correct. It is probable that two allied acids are concerned in the production of the disease: lactic acid, which is often the result of fermentation from indigestion, and sarco-lactic acid, which is developed in the muscles.

It is highly important to check the rheumatic tendency at the outset, if possible, where it is hereditary, and to this end all appropriate hygienic and preventive measures should be adopted, among which may be mentioned a diminution in the quantity of saccharine and starchy food allowed, and the constant wearing of flannel. In an attack of rheumatism, Dr. Chapin is accustomed to commence the treatment with a dose of Rochelle salt, followed by oil of wintergreen and salicylate of sodium. If any disturbance of the heart is shown, he insists on the most absolute repose in the recumbent position. When endocarditis or pericarditis is present, bodily exercise may be of the greatest possible mischief; as irreparable damage to the heart may ensue if prolonged rest is not secured. This he regards as a point of very great importance. The heart is comparable to an inflamed joint which needs rest more than anything else, and it seems probable that in many cases if the organ can be rested, as far as possible, for several months, the danger of permanent damage may be averted. The long-continued use of such agents as

iron and cod-liver oil should also be resorted to. Dr. Chapin believes that even when valvular disease is present, by appropriate treatment it may sometimes be caused to disappear. At all events, it is of extreme importance that valvular disease should be recognized at the earliest possible period.

DR. JOHN C. PETERS said that the manifest and clearly defined acute rheumatism of children is so much like the same affection in adults that its consideration does not call for special attention. It is the much more common indistinct forms, which none the less give rise to other troubles, particularly cardiac affections, that the profession needs to be especially on its guard against. He thought that the majority of cases show no articular disease, the affection manifesting itself principally in stiffness and soreness in the muscles. Of course, no intelligent physician now ever attends a child suffering from rheumatism without examining the heart every day. He had seen a number of cases of children who merely had a little soreness in the muscles and a little fever perhaps, suddenly taken with shortness of breath and pain in the chest, when an examination of the heart would show the presence of acute rheumatism. He had seen such cases recover perfectly, so far as the general health was concerned. In the course of a year or more, however, there would be a relapse, and then there would be other relapses, and finally the patient would die of valvular and hypertrophic disease.

In chorea he had observed a large number of children with valvular disease. In the same way these patients might recover their general health, but afterward have relapses in the same way as those who suffered from rheumatism.

He then went on to say that he had been in the habit of regarding a large number of catarrhal affections as essentially rheumatic. Rheumatism of the throat is to be recognized by the difficulty of swallowing which characterizes it. In such cases there is usually very little redness or other trouble that can be distinguished by the eye. He had also seen several instances of dysentery where the intestinal trouble disappeared on the breaking out of rheumatism elsewhere in the system, and he regarded the affection under the circumstances as rheumatism of the colon.

Dr. Peters said that there was no doubt in his mind that the acid theory of the causation of rheumatism is the correct one. It is not certain precisely what the acid is, but there is a considerable amount of evidence to show that it is lactic acid.

In the treatment he is in the habit of making potash the basis of all his remedies, as he considers it preferable to soda. He has used tepid alkaline baths with very good effect, and warm powdered chalk is also an excellent application, particularly when there is much perspiration. Phosphate of soda is about the only soda salt which he ever employed in rheumatism. The debility and anæmia which attend the disease are very great, and for the relief of this condition he has found the tartrate of iron and potassa excellent. The potash is also of much service in diminishing the excessive amount of fibrin in the blood in rheumatism. He thought it altogether a mistake to suppose that this alkali is more debilitating to the system than soda.

DR. J. LEWIS SMITH said that he had notes of seventy-three cases of rheumatism in children. Whether there was or was not a *materies morbi*, such as lactic acid, in this affection, he had observed two principal exciting causes, viz., taking cold, and scarlet fever. Inherited predisposition was also common, and he found that it had been specially noted that rheumatism had occurred in one or both parents in eighteen out of his seventy-three recorded cases. One attack of the disease predisposed to others.

Rheumatism is rare under the age of two years, but well-authenticated cases are on record in infants of six months. In most cases of the disease in children, the symptoms are much less severe than in adults. It usually begins in the lower extremities, and then extends upward; but the reverse of this is true in scarlatinal rheumatism, where the trouble begins in the upper extremities, as a rule.

But however mild the attack may be, rheumatism is a dangerous malady in children, on account of the liability to heart trouble which characterizes it. Endocarditis may begin as early as the second or third day, and in one instance he has observed it on the very first day of the attack. If the child escapes this complication for the first week, and proper remedies are administered, the chances are that endocarditis will not occur at all. Dr. Smith said that in 43 out of his 73 cases there was a mitral regurgitant murmur. The endocarditis was usually superficial. One case of embolism has been noted by him as a result of endocarditis. Pericarditis is much more rare than endocarditis, although there is little doubt that it is more frequently overlooked than the latter. Pleurisy, in his experience, is not a very frequent complication.

As to the association of chorea and rheumatism, out of 68 cases of chorea which he had noted, 26 of the patients had had rheumatism one or more times. Usually the rheumatism preceded, but occasionally the chorea set in as early as the latter. Of the other 42 cases of chorea, in 11 one or both parents, and in one other a sister, had had rheumatism. Therefore, in about 50 per cent. of his cases rheumatism was noted either in the patients themselves or in near relatives. Dr. Smith said that he should like to emphasize what had been said about the importance of making an early diagnosis, and placing the patient as soon as possible on the use of proper remedies. By attention to this point, many lives could, no doubt, be saved.

The best remedy is the salicylate of sodium, or of potassium, if the latter is preferred. Dr. Smith was inclined to believe that, as a rule, this remedy is commenced too late, and given in too small doses; the reason for the former being that the diagnosis is not made early enough. If given sufficiently early and in large enough doses, he thought that it would, in a large number of instances, prevent cardiac complications. He recommended that it should be commenced on the first day, if possible, and given in doses of ten or fifteen grains to a child four or five years old. Given in this way, he has come to regard it as a specific. In cases, however, in which the disease had already continued for two weeks, he has been disappointed in its efficiency.

As to the origin of the lactic acid, provided this is the essential cause of rheumatism, he thought that Dr. Chapin was probably mistaken in attributing its formation to fermentation in the processes of digestion, for

the reason that in infants, where lactic acid fermentation is by far the most common, rheumatism is much more rare than in older children, who are much less subject to lactic acid fermentation.

DR. MALCOLM MCLEAN said that he was inclined to believe, that if the minute history could always be ascertained, it would be found that heredity was a factor in every case of rheumatism; the affection constituting the prevailing tendency of the patient's family. Such had been his own experience in quite a number of instances. He had also, like other observers, noted the much greater frequency of the disease in girls than in boys, no less than four out of five of his cases being in girls. This was in part due, he thought, to the style of clothing worn. As to so-called "growing pains," he believed that they are invariably due to rheumatism, and that physicians should on this account not underrate their importance. In some cases of chorea he had observed a condition of accelerated cardiac action remaining, sometimes for years, after the choreic trouble had disappeared, although no cardiac disease whatever could be detected by the most careful examination. This seemed to show an undoubted rheumatic element.

DR. L. EMMETT HOLT remarked that typical rheumatism is very rare in children; but if pains be taken to discover it, it will be found that rheumatic disease is nevertheless very frequent in this class of subjects. In these indefinite cases it is necessary to seek out the attendant conditions, and to inquire into the matter of heredity. As to tonsillitis, there is a marked tendency among the later writers to trace a strong connection between quinsy and rheumatism. As to ordinary follicular tonsillitis, however, he doubted whether there is any special connection between the two, as in two hundred cases of the latter he had not been able to find any apparent association with rheumatism.

DR. KITCH said that he had hoped that in this discussion something would have been said of the connection between rheumatism and the choreic joint affections of children. All the authorities on orthopædic surgery which he had been able to consult, had extremely little to say on this point; but in his own experience he had seen quite a number of cases of diseases of the joints which he believed to have been of rheumatic origin. It is often a matter of some difficulty, however, to make a satisfactory diagnosis between a rheumatic and a tubercular or strumous source of trouble in such cases. Still, he had frequently met with cases of Pott's disease and hip disease, in which there was rheumatism in the parents, and quite recently he had seen one such case in which the child itself was rheumatic and had a direct mitral murmur. He also referred to tarsalgia in children as a rheumatic affection.

THE PRESIDENT said that heart disease is very frequent in children, and this is due to two causes, first, sepsis, which is very rare; and, second, rheumatism, which is the cause in the vast majority of instances. The cases of congenital cardiac disease are those of the right side of the heart, and these usually terminate fatally at so early a period of life that it is not necessary to take them into consideration.

As a rule, the younger the child, the less prominent the joint affection in attacks of rheumatism. As to the so-called "growing pains," he thought a word of caution necessary. Dr. McLean had remarked that the diagnosis of growing pains ought never to be made, and that when the parents mention that a child is suffering from such pains, it should always be treated by the physician for rheumatism. It is, no doubt, true that such pains are very frequently of rheumatic origin; but they might be due to other causes also. In the first place, the affection may be a neurosis, and there is sometimes an œdematous swelling about, but not in, the joint. Secondly, there is such a thing as *real* growing pains. When the epiphysis and cartilages are developing rapidly, hyperæmia always results, and this may be so marked as to cause the pain complained of. By this it was to be understood that rachitic epiphysitis was not meant. Sometimes this development in the epiphyses went on very rapidly during and after an attack of such diseases as scarlatina and typhoid fever.

DR. J. LEWIS SMITH said, in reference to the acceleration of the heart's action without appreciable cardiac lesion, mentioned by Dr. McLean, that he called to mind a case of this kind, in which the autopsy showed the presence of well-marked endocarditis. Yet during life there had been no murmur whatever. He had presented the specimen to the Pathological Society, and the examination of the heart was made with great care by Prof. Francis Delafield. Endocarditis was not necessarily accompanied by such lesions of the valves as to give rise to murmurs.

DR. CHAPIN said that he wished those present would endeavor to assist him in collecting cases in which there had been evident valvular trouble, which afterward entirely disappeared.

THE PRESIDENT remarked that there are a certain number of cases in which a cardiac murmur disappears after lasting perhaps only a day or two, or perhaps for a longer period. These are probably instances of simply a rheumatic murmur, and not really of endocarditis. What we take to be endocarditis is in fact rheumatism of the heart muscle. But in other cases there is true endocarditis attended with a murmur, which after a longer or shorter period entirely, or almost entirely, disappears. A heart in which this takes place is not strictly a normal heart, being larger than it should be, but compensation is so ample that no murmur results. This change usually takes place a little after the age of puberty, and it is more likely to occur in males than in females. Dr. Jacobi said he knew of several cases of this kind in the city, where the patients were now grown men, and entirely free from any appreciable cardiac trouble. Dr. Smith had called attention to the fact that endocarditis might occur without valvular disease. This is no doubt true; but in the larger number of cases of endocarditis without a murmur, the disease is probably of an ulcerative character. In the ulcerative form of endocarditis the valves are affected, but the lesion is not on top of the valves, but at their insertion.

The CORRESPONDING SECRETARY announced the

DEATH OF PROF. ALFRED C. POST,

ex-President of the Academy, and on motion of Dr. John C. Peters, the President was requested to appoint a committee to prepare a suitable memorial of the life and services of the deceased surgeon.

CINCINNATI ACADEMY OF MEDICINE.

Stated Meeting, February 1, 1886.

THE PRESIDENT, SAMUEL NICKLES, M.D., IN THE CHAIR.

DR. THADDEUS A. REAMY read a paper on

OÖPHORECTOMY FOR THE RELIEF OF HYSTERO-EPILEPSY.

(See page 230.)

DR. S. P. CONNER remarked that although he had never done the operation referred to, he could heartily congratulate Dr. Reamy on the success of his operation, and more especially on the success of his remedy for vomiting. As the paper was being read, however, he had been forced to question whether there was in the case reported a true peritonitis, for the symptoms could all be explained by referring them to reflected irritation. But whether there was or was not inflammation of the peritoneum, it is gratifying to know that we have a remedy which will act so kindly and so promptly in these cases of persistent vomiting. The remedy administered in the manner reported may exert a primary effect on the hypogastric plexus, a secondary effect on the solar plexus, and later on the medulla, its action being increased by its being thrown into the rectum. It was stated in the paper that the patient had taken chloral before, both by the mouth and by the rectum, in twenty grain doses. This would indicate in a measure her tolerance of chloral. The experience of the speaker would indicate that chloral is an exceedingly treacherous remedy, affecting some individuals more strongly in the dose of five grains, than it does others in four times that amount, so that the susceptibility of each individual must be ascertained before a large dose is given. It is the remedy which, above all others, controls spasmodic affections, as is shown by its action in tetanus. The reports of its action, whether it be taken by the mouth or by the rectum, speak very favorably for its use in such affections. It must not be forgotten, however, that chloral sometimes produces very disastrous effects by its toxic action upon the medulla. The dose in this case was small in comparison to the doses that have been administered. The speaker had been particularly struck, in reviewing this subject, by a case reported by Beck, of the Baden army, in which the remedy had been given in the quantity of 420 grains in three and a half hours; the patient slept thirty hours, and recovered. Two hundred grains a day have not unfrequently been administered for days together. The speaker's own experience is not without interest in this connection. He had, when the remedy was first introduced, taken eighty grains of it within forty minutes, for severe headache. He slept ten hours without waking, and then awoke with the most terrific headache he had ever experienced.

In all irritations in connection with either the intestinal canal or bladder, in regions supplied by either the hypogastric or solar plexus, chloral has been found to act very kindly indeed. It had just occurred to the speaker that chloral might be of service in allaying the early vomiting attending strangulations of the intestine, whether internal or external. The only difficulty would be that it tends to mask the very symptoms most indicative of danger, without relieving the difficulty.

DR. JAMES T. WHITTAKER remarked that the case which had been reported this evening, has its surgical, its physiological, and its medical aspect. The essayist requests us to consider it only from the standpoints of physiology and medicine. It is a curious thing that facts so common as vomiting and even sleep have never yet received a satisfactory explanation. For his own part, the speaker had become dissatisfied with the explanations of the nature of the process concerned in vomiting. First, it is stated that it is caused by irritation of the pneumogastric; then we meet the statement that it will occur after section of that nerve. Again we read that vomiting is occasioned by the contraction of the muscular fibres in the wall of the stomach; then that it occurs when the stomach has been entirely removed and a bladder substituted. The present prevailing view calls for a special centre in the medulla.

The most varied remedies have been used for the control of vomiting: bismuth, effervescents, creasote, external irritants, etc., but in bad cases the time comes when we must all resort to anodynes. The most effective of the anodynes is morphia; administered subcutaneously it is usually successful in controlling vomiting. The speaker would not place the same confidence in chloral for the control of vomiting as in morphia. In obstruction or hernia he would not trust it as he would morphia, because in these affections the vomiting has the character of a regurgitation. The better way of relieving this kind of vomiting is, in the judgment of the speaker, to remove the contents of the stomach. Dr. Conner stated a truth when he remarked that chloral is the most powerful agent in controlling spasmodic affections. Any one who has seen its action in relieving the vomiting and cramps of cholera, must agree with this statement. In the last epidemic of that disease which visited this city, he had seen nothing which was equally efficacious. He did not place the same faith as the essayist in the rectal use of the remedy, however; and his scepticism was based on its failure in so many instances to produce the desired effect. A case had come under his observation with the last speaker, where the patient actually died of vomiting, and chloral used in every way had no beneficial effect whatever. He was somewhat surprised by the statement of a previous speaker, that so small a quantity of chloral has produced fatal effects. In the last article he had seen on the subject, by Liebreich, it was stated that a smaller dose than sixty grains had never produced a fatal result, unless impure chloral had been used. It would be interesting to know in these cases what preparation of the remedy had been employed.

DR. CONNER stated that in the vomiting of strangulated hernia, the early vomiting to which he had referred was not due to overfilling of the stomach and bowel, but to reflex irritation, though the latter vomiting is of the retained contents of the canal above the seat of obstruction. Chloral then may, by diminishing or arresting the reflex action, be of great benefit; the danger in using it lies in the arrest of symptoms without in any degree relieving the conditions upon which they depend.

DR. SAMUEL NICKLES thought there could be no doubt that at the present date the process of vomiting is perfectly understood, and what particular nerve centres control the various muscles which are engaged in a

simultaneous action during the vomiting process. The essayist quoted the remarks of Brunton on this subject, and that author has given a full and clear account of the present state of our knowledge. It has been stated that vomiting is produced by tartar emetic even when the vagus is cut. We can produce vomiting by simply titillating the throat, and by applying certain emetics to various parts of the body. When tartar emetic is injected into the veins or under the skin, a part of it may be eliminated by the mucous membrane of the œsophagus and intestines, and it will, therefore, produce vomiting by its local action, even after the stomach has been removed. It was formerly supposed that tartar emetic acts by exciting the vomiting centre in the medulla oblongata; but when it produces vomiting, a portion of the drug can always be found in the vomited matter. When injected locally it passes through the blood to the stomach to produce its local effect. In a case like that related by the essayist, the vomiting was not produced by an irritation of the stomach, and in the opinion of the speaker it was difficult to see why the remedy administered would not have acted just as well if given by the stomach. It has been stated that when the remedy is injected into the rectum, as in this case, it has a more direct action on the nerves of the abdomen. In the opinion of the speaker, however, chloral injected into the rectum must enter the circulation, pass up through the portal vein, through the liver, through the hepatic vein, get into the right side of the heart and finally into the general circulation before it can reach the nerves of the abdomen, and, in reality, pass through the same course as if taken by the stomach. Unless it is shown experimentally that it acts more directly, he would doubt such a view.

Chloral cannot be well administered hypodermically, because concentrated solutions combine with the tissues and are retained by them. Solutions containing more than ten per cent. are likely to produce local disturbances, and stronger solutions are apt to produce abscess. Diluted solutions can be used, but the dose is so large that several syringefuls must be injected.

Chloral is an efficient agent to arrest certain spasms. We can, for instance, very readily prevent the spasms of strychnia by it. In rabbits, if chloral be previously injected, an ordinary lethal dose of strychnia will not produce tetanic spasms. But chloral will not allay all spasms. It will not allay the spasms of epilepsy; it is largely used in cases of chorea to produce sleep, and during sleep, of course, the spasms cease; in this it is effectual. There can be no doubt, too, that in certain forms of vomiting it would be an exceedingly useful agent in doses not exceeding twenty grains; but the speaker believed the bromide of potassium a better remedy in the vomiting of pregnancy, and an agent which may be given in large doses, in as much as half a drachm or one drachm doses if necessary, without producing any evil effects.

Death has resulted from thirty grains of chloral, and a case was reported in which ten grains were believed to have produced death. The speaker has seen very dangerous symptoms produced by thirty-five grains. The rule laid down in some of the text-books at present is that twenty grains should be the maximum dose at first. This may be repeated in an hour, and it is generally stated that sixty grains may be given in succession. Obstetricians, he believed, place the dose that is required to produce rapid dilatation of the os at fifteen grains, to be repeated tw ce if necessary.

While chloral is a useful remedy in tetanus, it is still doubtful whether it diminishes reflex action as promptly as does the bromide of potassium. Huseman, among others, is of opinion that its action is chiefly on the brain. It may act on the cord also, but it certainly produces depression of the brain cells. A person asleep from a dose of twenty or thirty grains of chloral does not breathe more slowly than a man in a natural sleep. The brain cells are depressed while the other organs are not notably affected.

The present treatment of tetanus consists in chloral at night only in ordinary hypnotic doses and the bromide of potassium during the day. In poisoning by strychnia, chloral is a very useful remedy, but it is to be given at first only in hypnotic doses.

DR. WHITTAKER inquired whether Dr. Nickles had read of more than one case that had succumbed to a dose of less than thirty grains of chloral. Some of us, he said, are accustomed to give thirty grains regularly as a dose. Bouchut does not hesitate to give thirty grains to a child, or even to an infant. Death has occurred from very small doses of morphia, and yet that has not disabused our minds of the idea that a quarter grain is the proper dose of that drug. One or two cases of death from a very small dose of chloral are not sufficient to establish a rule, but if such cases become of frequent occurrence, twenty grains would appear to be the maximum dose. The speaker had always advised the use of chloral only at night; and he had never hesitated to raise his voice against preparations containing both chloral and the bromides.

DR. NICKLES replied that he had not reviewed the statistics for some time, and could recall only one case in which ten grains were followed by death. In his own case thirty-five grains had not produced death, but alarming symptoms took place. He added also that children bear chloral well. Infants may take one or two grains as a rule. He would hesitate to give larger doses to a very young child. He thought that twenty grains should be the maximum initial dose for an adult; he would, however, repeat it in the course of half an hour if necessary, and give a third dose in the course of another hour if the second did not secure the desired effect. If a seemingly healthy patient dies after taking such a dose of chloral, he would not believe that death was the effect of the chloral. In the same way it is an error to attribute the death of a person who has taken an ordinary hypodermic dose of morphia to the remedy, unless a carefully conducted post-mortem fails to reveal any other cause of death.

The speaker added that chloral is not now considered an anodyne, but only a hypnotic. It does not relieve pain as such; however, it may have some action on the sensory nerves when applied locally.

DR. R. B. DAVY agreed with the last speaker in the statement that in most of the cases in which death follows the administration of chloral in ordinary doses the death is the result of some other cause. These deaths, he said, usually occur in individuals who are broken down in constitution, as in drunkards, in whom the action of any remedy is likely to be much modified. With regard to twenty grains as the maximum dose, the speaker had

seen cases in which that dose every two hours would not produce sleep. He then reported a case in which he had prescribed twenty grains of chloral every two hours. At night he was called, and found his patient in a deep sopor, from which she could not be aroused. Suspecting that the condition was not wholly due to the remedy he had prescribed, he ordered an enema, and in a short time after the patient revived from the condition in which he had found her. He also reported a case of convulsions from scarlet fever in which after other remedies had failed he had quieted the spasms by the administration of chloral.

DR. REAMY, in closing the discussion, said that he had in reporting the case expressed the same doubt entertained by the first speaker, as to whether there was really acute peritonitis present. Of this he had no doubt when the chloral was administered. His doubts had arisen from the promptness and extent of relief obtained. Not only was vomiting relieved, but pain also, followed by sleep, and there was reduction of temperature.

However, he had usually found that when after laparotomy or other surgical operations upon the abdominal or pelvic organs, there is a rise of temperature, and more especially acceleration of pulse, with pain, tympanites, and vomiting, peritonitis is present. He considered under such circumstances, the vomiting of the so-called spinach-colored fluid as almost conclusive. He regarded the elevation of temperature as much less significant than acceleration of pulse. He had seen more than one fatal case of peritonitis where the temperature had at no time been above 101°. In this case the pulse had not been reduced after the chloral was administered, but this was not surprising, as he had in other cases verified the accepted opinion that chloral does not reduce but accelerates the pulse.

The next speaker had probably misunderstood him. He had not recommended chloral as a universal remedy for vomiting, he had not arrayed it against morphine, or placed it above this agent; he had only recommended it in the vomiting of pregnancy, and had inferred from its happy action in the case under consideration that it might prove efficacious in other cases of vomiting dependent upon peritonitis.

The speaker said that he had not the same confidence in the supreme action of morphine in controlling vomiting, as his friend Dr. Whittaker seemed to have. It is well known that in certain subjects vomiting invariably follows upon the administration of morphine, even though it be given hypodermically.

After abdominal surgery, when he has administered morphine for relief of pain and vomiting occurs, he is always, at first, at a loss to know whether it is due to the morphia or to peritonitis, so common is it for morphia to cause vomiting.

With regard to the action of chloral and the method of administration, in reply to the statement of the President that the remedy would have acted as well if it had been given by the mouth instead of by the rectum, the speaker called attention to the fact that the patient vomited everything taken, even a spoonful of water; therefore, the remedy could not have been retained. Moreover, it had been his experience that in the vomiting of pregnancy the remedy acts much more efficiently when administered per rectum.

The speaker had already called attention to the promptness with which chloral is absorbed by the rectum—osmosis commences at once. He would, of course, not pretend that its physiological effects are secured until it has reached the medulla, but he has repeatedly observed, clinically, that so-called after-pains are relieved more promptly and permanently by thirty grains of chloral per rectum, than by the same dose per os; indeed, the relief is more marked under such circumstances than that obtained from one-fourth of a grain of morphia *per os*. He regarded these observations as important.

It is denied that chloral has anodyne properties; in this view he could not fully concur, notwithstanding the highest authority. He supposed it might be considered that opium relieves pain and sleep follows, while chloral secures sleep and relief of pain follows.

THE PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, January 26, 1886.

DR. H. C. WOOD reported

TWO CASES OF SYPHILITIC DISEASE, THE LESION IN ONE INVOLVING THE ASCENDING FRONTAL CONVOLUTION; IN THE OTHER, THE CERVICAL SPINAL CORD.

The first of these cases is of special interest, because so far as the motor symptoms are concerned the situation of the lesion closely agrees with the modern doctrine of cerebral localization, whilst no lesion was found to account for the loss of sensibility. The only explanation that could be given of this is that disease had existed in the membrane over the angular gyrus, and had been removed under the influence of the mercury, there being no record as to the condition of sensation just previous to death. This explanation seems, however, rather lame, because more distinct traces of such lesion would naturally be expected. The cases are also of interest as illustrating a danger which always overhangs a person suffering from syphilitic epilepsy—namely, possible arrest of respiration during the convulsion, and consequent death.

Case I.—R. B., male, aged fifty, entered the Nervous Ward of the Philadelphia Hospital, January 2, 1885. The following extract is taken from the case-books of the institution: "R. B. says that his health has always been good, and whilst acknowledging that he had chancres twenty-five years ago, denies all other forms of venereal disease. Eight years ago he fell downstairs and struck his forehead just above his left eyebrow; he was picked up unconscious, and remained in that condition for four hours. One week after his fall he returned to work, but was troubled with a feeling of lightness in his head and vertigo. About two weeks after this he suddenly felt a peculiar pricking sensation in his right foot, which extended rapidly up the leg to the thigh, and finally to the right arm and thence to the head, and was immediately followed by unconsciousness. He has never bitten his tongue in this or any subsequent attacks. The convulsion was followed by a period of stupor or sleep. About two weeks after there was a second epileptic attack without any aura or other warning. His arm, which had continued in a numb condition ever since his fall, for a time grew steadily worse.

For one year its condition then remained unchanged. He still had epileptic attacks at intervals, varying from a few weeks to a few months. Eighteen months ago he had an apoplectic attack, in which the unconsciousness lasted for several hours. There was no ensuing paralysis; nor did his health seem to be the worse for the sickness. He states that he now has attacks of epilepsy at about monthly intervals. These attacks are preceded by a peculiar twisting of the fingers of the affected hand, and followed by stupor or somnolence, lasting for about twelve hours.

Present Condition: There is partial motor paralysis of the right hand and arm. With the left hand he moves the hand of the dynamometer to 95; with the right only to 30. The æsthesiometer points separated to their widest, are felt on the right hand and arm as only one; on the left arm the points are separated on the ulnar and radial side at two and a half centimetres apart; on the palmar surface at four centimetres. He has not as good use of his left leg as formerly, although there is no complete paralysis of any of its muscles. Patella tendon reflexes normal. Ordered potass. iodide in increasing doses.

Treatment: January 6, 1885. According to statement of nurse, in his fits the patient works altogether with right side. Left pupil slightly smaller than right. Perceptible weakness in right side of face. Dynamometer: right hand, 46, left hand 87. In neither thigh is there any difference in sensitiveness. He complains a good deal of frontal headache. Edges of optic disks sharply cut, and optic disk itself abnormally white, and believed to be atrophic. Ordered to be ptyalized.

The patient was ptyalized, and afterward was given the iodide very freely; but notwithstanding there was distinct improvement in regard to headache and general condition, the fits continued, although at longer intervals, and on the ninth of May there was prolonged unconsciousness after a fit, ending in death.

Autopsy: Contents of thorax normal, except as to congestion; liver is large and congested, indurated, capsule thickened. In the tissue between the right and left lobes, anteriorly and near the lower edge, is a distinct gummatous tumour of the size of a hickory-nut. The new growth has developed from the capsule and grown inward. Upon the upper border of the same fissure and posteriorly is a scar, evidently a healed gumma. Kidneys congested, but otherwise normal. Rest of organs normal.

Brain: When the skull cap was removed some ounces of black blood ran out. Membranes much congested everywhere. Dura mater normal, except in being abnormally adherent to the edges of the great fissure.

Left hemisphere: Arachnoid and pia mater abnormally thick, especially superiorly, and somewhat opaque. Vessels somewhat congested. On external inspection of the bared convolutions nothing abnormal is observed, except about the middle of the ascending frontal convolution, where at a spot one-half inch in diameter the membranes were fused with the brain surface, and could not be separated. The tumor is one-third of an inch in thickness, and in tearing it out a definite cavity was left. No other lesion discoverable in any part of that hemisphere. Remainder of brain normal in general structure.

Cause of death: Œdema of the brain from cerebral syphilis.

Case II.—Cadamoni, aged about twenty-two, entered the wards of the Philadelphia Hospital, June 1, 1885. As he was an Italian of very low order of intelligence, no detailed history of his case could be obtained. He stated, however, that he had been well and strong until three months before, when he had been hurt in the upper part of the back, and had not been able to work since. One month before entrance he had rapidly lost power in both arms.

His condition at the time of entrance to the hospital was as follows: He is unable to stand, and entirely confined to bed, but can make feeble and slow movements of the thighs, legs, and feet; all muscles seeming to be about equally implicated. The whole of the left arm is paralyzed, except the thumb, which can be moved slightly. In the right arm the deltoid and the flexors of the fingers are much wasted. There is no paralysis of the face; patient cannot turn in bed, but has not lost control of the bladder and of the rectum; sensation is not much affected; pain is complained of in the back and side of the neck and in the limbs, especially in the arms; marked pain in the sternal region on coughing. Pressure of the lower cervical vertebræ causes severe pain, and forcible jarring of the head also produces pain in the lower cervical spine; cervical vertebræ not distinctly prominent; patella reflex somewhat exaggerated; temperature normal; bowels persistently very costive.

The patient was put upon a water bed; iodide of potassium given in rapidly increasing doses, until a hundred and eighty grains a day were taken, but the symptoms gradually increased, paralysis became more marked in the lower extremities, and complete in the arms; power over the bladder and rectum was lost, and the patient died June 18th, seventeen days after his entrance into the hospital.

The autopsy was confined to the vertebral tract. In the lower cervical region, extending into upper dorsal, was a thickened mass, several inches long, not at all separable from the membranes of the cord. The outer portion of this is formed of a uniform structureless base, filled with numerous long, narrow, curved cells, evidently derived from connective tissue. Within, this mass is chiefly composed of innumerable small, round, closely packed cells; sometimes arranged in irregular, diffused masses, but in many cases collected into globular masses, which are only in rare instances distinctly separated from surrounding tissue. A few of these masses were yellow, the cells evidently undergoing fatty degeneration, and not taking the stain at all.

Cord underneath the tumor chiefly composed of a structureless, minutely granular, neuroglia matter, with numerous roundish neuroglia cells. No nerve tubule discoverable in section. Gray matter affected nearly as much as white; ganglionic cells still present, although most of them much altered.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, February 3, 1886.

THE PRESIDENT, S. WEIR MITCHELL, M.D., IN THE CHAIR.

DR. THOS. J. MAYS, read a paper

ON THE NUTRITIVE VALUE OF SOME BEEF EXTRACTS: AN EXPERIMENTAL INQUIRY.

A study of the extensive literature of the beef extracts shows the inconstant and indefinite opinions which have

been held concerning their action, and also illustrates the fluctuations of thought which the medical profession is liable to undergo. Liebig, who was one of the first to invest this question with scientific interest, held no less than three different theories regarding their action, during the last twenty years of his life. Since his death, medical opinion has by almost universal consent reverted to the second idea entertained by him, viz., that the beef extracts are of very little or no value as foods. It is true that this has been questioned by some whose clinical observations have led them to different conclusions, yet the works on physiology, therapeutics, or pharmacology, assign the beef extracts among the non-nutritious alimentary agents. Probably the most positive expression of this feeling among those who are considered modern authority on such subjects is that of Dr. Fothergill in his *Handbook of Treatment, or Principles of Therapeutics*, who, on page 537, says that, "as a food, beef-tea ranks low. It contains meat-salts, a small quantity of albumen, and a little gelatine, together with some advanced nitrogenized matters useless in histogenesis. But there is little in it to repair tissues, and less in it to sustain life, so far as our knowledge yet extends. There is little real force-bearing material in the protean compounds of beef-tea. For the starving fever patient, to give him beef-tea alone is almost to give him a stone when he asks for bread. It makes him feel better for the time being, but that is due to its stimulant properties."

There can be no doubt that the cause of the prevailing scepticism concerning the nutritive value of beef extracts is largely due to the experiments which were made by feeding animals exclusively on these preparations, with the result that all of them died within a short period of time. Indeed, Kemmerich affirms that they died more quickly than those which were left to starve from hunger. This has the semblance of proof that beef extracts are not capable of supporting life. Sober reflection teaches, however, that no animal can subsist continuously on any single food, and that such a test would unceremoniously refute the food value of almost any substance, no matter how nutritive it might be. But, beset with difficulties as this investigation evidently is, the question is not whether these substances are capable of sustaining life alone, but whether it can be shown that they contain any nutritive value at all, and if so how much. Here everything depends on the method which is employed to determine this question. It is imperative that this should be definite and exact. It must be able to show the functional state and condition of the organism, before, during, and after the addition of these substances; or, in other words, it must demonstrate whether the organism is, or is not capable of performing work when these substances are added to it.

To meet all these desiderata, Dr. Mays selected the isolated frog's heart.

In summing up the literature upon the action of the frog's heart in its relation to this subject, we find: That the heart in performing work consumes oxygen; that after it is once completely exhausted, it cannot resume its pulsations unless food energy is supplied to it from the outside; that blood, serum, milk, albumen, and gelatine are capable of acting as foods and of restoring its power of contraction, but no other substances have, heretofore, been shown to possess this property; that the pulse elevations and the amount of work which the heart is able to do, depend in a great measure on the degree of concentration of the food. These data, moreover, demonstrate very fully that the heart does not exercise the function of a purely circulatory organ in these experiments, but that it is an organic medium possessed of the power of assimilation, of transformation of energy, of contraction, and of respiration.

The apparatus which was employed in testing the food value of the beef extracts was the following: The heart, by means of a double canula, on which it is securely but gently tied, is attached to a Kronecker-Bowditch heart apparatus, and then through a mercury manometer, and an appropriate glass needle, it records its pulsations upon a revolving cylinder. The heart is fed or transfused through the double canula from two Mariotte's bottles, with any desirable fluid; and in order to keep it pulsating regularly, minimum shocks of one Daniell's cell through a DuBois sliding induction coil, were employed about every four seconds. Before testing the beef extracts, the heart was in every instance well washed out with a 0.6 per cent. saline solution, after which it was allowed to work with the same until all its stored-up material was exhausted and its pulsations reduced to zero. Then a weak solution of the inorganic elements of the beef extracts, chiefly containing phosphate and carbonate of potash, and chloride of sodium, was carefully tested on the heart to find out whether it had any power to induce cardiac contractions, but it failed in every instance. The same was also found to be true of a solution of urea whenever it was tried. After this preliminary work, a number of different dilutions of a beef extract previously prepared with a 0.6 per cent. saline solution (usually in the following proportions—1 : 100; 1 : 250; 1 : 500; 1 : 666; 1 : 1000; 1 : 2000; 1 : 4000) were alternately introduced into the heart and their effects noted. The stronger dilutions, like 1 : 100 to 1 : 500, had no influence whatever in restoring cardiac contractions; but in every specimen which was examined, the dilutions from 1 : 666 to 1 : 2000 had the power of reviving and of maintaining the beats of the heart.

Judging from the data obtained by experiments, the following deductions can be made concerning the influence of the beef extracts on the frog's heart:

1. That they are absorbed and assimilated.

2. That they contain material which has the power of inducing muscular contraction—a power which has heretofore only been shown experimentally to exist in the higher animal albumens or proteids.

3. That, hence, whatever else they may be, they are nutrients in the full implication of that term.

After it was thus demonstrated that these beef preparations contained definite nutritive properties, it was deemed desirable to ascertain the value of each, and means to this end were instituted by comparing their effects with those of a two per cent. solution of dried bullock's blood alternately on the frog's heart in the following manner: In the first place the heart, after being washed out, was filled with the two per cent. blood solution and then allowed to beat until its pulsations were reduced to a minimum, or until the whole nutritive supply of the blood solution was consumed; after which it was washed out again and filled with a solution of the beef preparation to be tested, and allowed to beat with

it until its pulsations were again reduced to a minimum. A large number of comparative tests were made of each of the above named beef preparations in this way, and the following products were obtained, which indicate the mean percentage of the number of pulse beats given by each preparation, while that of blood is taken as 100. These figures are probably not absolutely true, but they give an approximate idea of the nutritive worth of these extracts when compared with that of a two[1] per cent. blood solution, which is capable of producing a normal cardiac contraction.

	Mean Percentage of Number of Pulse-beats.
Liebig's Extract of Beef	58
Johnston's Fluid Beef	59
Valentine's Meat Juice	60
Cibil's Extract of Beef	61
Sarco-peptones (Parke, Davis & Co.)	62
Beef Peptonoids (Reed & Carnrick)	74
Milk	100
Two per cent. solution of dried bullock's blood	100

From this table, it appears that all these preparations contain very nearly the same amount of nutritive material except the Beef Peptonoids, which contain from ten to fifteen per cent. more than the others. It must not be forgotten in this estimation that the Beef Peptonoids are not a pure beef extract like the rest, but a compound of the latter with milk and gluten. Therefore, in order to get at the true value of this preparation it is important to test each ingredient. Milk alone gives as goods results as the blood solution, as can be seen from the table, and there is no doubt that a portion of its valuable property is due to this agent.

The next question which arises in this investigation is as to which of the many organic bodies resident in the beef extracts this nutritive property is due, and principally owing to the difficulty of obtaining these organic extractives, this portion of the work remains incomplete, but Dr. Mays is making preparations to resume it at an early day. It can be safely stated, however, that the inorganic elements of the beef extracts contribute no share to this result, for the phosphate of potash solution contains all these, and in every instance where this was tested it failed to bring out the least cardiac reaction. Hence, these can be left out of consideration.

When finely divided beef muscle is exposed to the action of about four or five times its own weight of cold water for four or five hours and then well pressed out, it loses from sixteen to twenty-four per cent. of its original weight. In this watery solution is contained from two to fourteen per cent. of flesh albumen, while the remainder is made up of kreatin, kreatinin, sarkosin, sarkin, xanthin, carnin, inosit, fat, glycogen, and the inorganic elements; while in the residue there is left nothing but fibrous tissue, principally composed of muscular fibres and connective tisue, which is tasteless, rejected by animals, and entirely unfit for nutrition. Therefore, it is very probable that all the nutritive element of beef muscle resides in its organic extractives.

Now there cannot be the least doubt that the variable amount of albumen contained in the beef extracts furnishes some of the nutritive property displayed by them, but it is far from Dr. Mays's intention to claim that this is exclusively due to it. Indeed, he has found altogether unexpected indications during the investigation which may, on further examination, throw some more light on this question. One thing, however, remains steadfast throughout, and that is, if the albumen of flesh is not the sole nutritive element in these beef preparations, then some or all of the organic bodies which they contain must be nutritious, and can no longer be regarded as effete products of the animal body.

It is not necessary to point out, then, that the multitudinous composition of these extracts makes them a very valuable class of alimentary substances, both for nutritive and constructive purposes. Dr. Mays thinks it is quite evident now that these preparations are assimilated and utilized by the frog's heart without previously passing through a digestive process, and we have no reason for believing that this does not also obtain in the human organism; hence in conditions where the stomach has an intolerance of food, or where there is any hindrance to the introduction of the same through the primary passages, the object of feeding the patient can readily be secured by introducing a suitable preparation hypodermically. A number of years ago he treated several such patients with Valentine's Meat Juice, which, on account of its complete solution in the normal state, is probably preferable for this purpose. He injected from fifteen to twenty minims three times a day with good effects. He failed, however, to keep a record of these cases, but recollected that one was a case of persistent vomiting caused by a severe blow on the head, and that after each injection the patient expressed himself as being stronger and feeling as if he had eaten something. Not the least irritation was produced at the point of injection, and he thinks this field deserves further investigation.

[1] Two per cent. solution of dried bullock's blood gives as good cardiac contractions as fresh blood in proportion of 1 : 3.

NEWS ITEMS.

CANADA.

(From our Special Correspondent.)

SMALLPOX.—The epidemic has at last burned itself out. The week ending February 12th is the first week without a death from smallpox for about eight months. There are still some sixty cases in the Mount Royal Hospital, but all are doing well. The disease is breaking out in various parts of the province where they have neglected to isolate cases, and where there are no local health boards. The Central Health Board seems powerless to enforce the laws regarding health matters outside of Montreal.

REGISTRATION OF BIRTHS.—A meeting of those interested in the new Public Health Bill was held a few days ago, Dr. R. Palmer Howard in the Chair. A committee was appointed to draw up a suitable bill, and especial directions were given them regarding the introduction of a clause concerning the registration of births. Heretofore the authorities of the Roman Catholic Church have always opposed any registration of births bill, but now they have consented to notify the Registrar of all the baptisms which are performed in their churches. The Protestant clergy have agreed to do the same. Special provision will have to be made for the unbaptized. Although this is rather a roundabout way of getting at

the births, still it is better than no registration. All the Roman Catholics have their children baptized within a week of birth, and there are very few exceptions to this rule. Among the Protestants baptism is not performed so early or so constantly, and a large number do not have their children baptized at all. This class, of course, will be compelled to register before a civil officer. When a record of the births is obtained, compulsory vaccination can easily be enforced.

CALCULUS OF TONSIL.—At a recent meeting of the Montreal Medico-Chirurgical Society, Dr. A. Lapthorn Smith exhibited a calculus of the right tonsil, which he had removed from a young man a few days before. The calculus was as large as a small walnut.

GERMAN GYNECOLOGICAL SOCIETY.—The first Congress of the German Gynecological Society will be held in Munich on the 17th, 18th, and 19th of June, 1886.

IT IS ESTIMATED that fully three-fourths of all the morphine manufactured is used for purposes of self-indulgence in the morphine habit.

TELEPHONES FOR THE SICK CHAMBER.—A London firm has devised a telephone by which persons suffering from contagious disorders may safely communicate with their friends.

MEDICATED OYSTERS.—The *Union Pharmaceutique* for 1885, p. 564, states that, in a perfectly serious advertisement, a French oyster dealer offers for sale both ferruginous oysters and tar oysters.

FERMENTED INFANT FOOD.—Dr. Polden, medical officer, Punjab Northern State Railway, has published an instance of a baby having been intoxicated by a fermented specimen of Mellin's food, purchased in the bazaar. Alcohol was found in the bottle by the Punjab Chemical Examiner.—*Indian Medical Gazette*, Dec. 1885.

MLLE. FRANCELLINE GAROCHE, a native of Nancy, France, has just entered her one hundred and fourth year. Her health is remarkably good, and the Société d'Encouragement has lately presented her with a gold medal. The journal in which this fact is recorded queries whether the medal was for the encouragement of celibacy or for the art of prolonging life.

THE FUTURE OF THE AMERICAN MEDICAL ASSOCIATION.—The meeting of the American Medical Association at St. Louis, Mo., in May next, will be a most important and we trust a successful one. Surely every physician who holds the honor of his profession dear should either go himself or interest himself in sending such representatives as are honorable and pure, free from all selfish motives for self-advancement and preferment and fully alive to the important issues that will be discussed at this meeting. The topic of the International Medical Congress will be the absorbing question for discussion, and will, we hope, be definitely settled, at least so far as it relates to the Association. Of late years this Association has appeared to degenerate into a body merely medico-political and it is time something should be done to elevate it to a proper standard and make it what the British Medical Association is to the profession in England, representative and national. Political intrigue and trickery have too long held sway in this Association and it is time the profession should see to it that it be no longer thus degraded, and be brought back to the place it occupied in its palmiest days. From year to year the meetings have become less and less important in a scientific point of view, and it is time every true physician should individually strive to change its downwward course. If some change is not soon effected, the Association will cease to exist and the profession will turn its attention to the separate special Associations which are all now in a flourishing condition. We hope, therefore, that all who can will make an effort to attend the coming meeting.—*Nashville Journal of Medicine and Surgery*, Feb. 1886.

The American Practitioner (Feb. 20), says: "In spite of all opinions to the contrary, we believe the Association will continue to be the representative body of the great mass of the profession in the United States. It was led astray at New Orleans. It will doubtless be led astray again and yet again, for designing, ambitious, selfish, and industrious plotters will gather at every meeting, and opportunities for their securing power will occasionally occur, and seizing these they will again plunge the Association into errors as unfortunate and as grievous as any of those committed in the past.

"With the lapse of years it will gain experience and grow both soberer and more conservative. It will have done with politics, ethics, and homœopathy. It will make the standing of the individual at home, and the character of his contributions to our common stock of knowledge its single test of loyalty. And, with its eyes cleared of the mists begat by personal feeling, and its heart purified of unworthy ambitions by defeat and mortification, it will come to see that true science knows neither sectional lines nor geographical distinctions, and taking counsel of its toilers rather than of its politicians, of its students rather than of its talkers, of its investigators rather than of its tricksters, it will make itself the accepted apostle of the gospel of work, and enter upon a new era of growth and prosperity."

NOTES AND QUERIES.

THE SENSE OF TASTE: A CORRECTION.

To the Editor of THE MEDICAL NEWS.

SIR: To-day's NEWS reports me as saying at the Neurological Society, in discussing the question of the sense of taste, that "it was considered proper to divide the chorda tympani for tinnitus aurium, and it was supposed to have been done." The very natural mistake of writing "chorda tympani" for *tensor tympani*, is here made. What I said was that, in dividing the tendon of the tensor tympani, the chorda tympani had been, I believed, sometimes divided also, and without perceptible injury to the sense of taste.

Whilst otologists would see that the above was a mistake, yet it might prove misleading to others, and I, therefore, beg a place in your columns for the correction.

SAMUEL SEXTON.

12 WEST 35TH STREET, NEW YORK,
February 20, 1886

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING FEBRUARY 20, 1886.

AUSTIN, H. W., *Surgeon*.—To proceed to Richmond, Vermont, on special duty, February 8, 1886.

URQUHART, F. M., *Passed Assistant Surgeon*.—To proceed to Richmond, Virginia, for temporary duty, February 16, 1886.